TECHNOLOGY AND INNOVATION IN A MEXICAN VILLAGE

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D E D I C A T I O N

To Lulu and Stevey

C O N T E N T S

PLATES

MAPS

FIGURES

TABLES

its inception and completion.

My thanks go to all of these with an acknowledgement that all errors and omissions are my own responsibility.

A B S T R A C T

This thesis outlines the history of Mexico with particular reference to the economic conditions prevailing in the rural areas. The results are presented here of a village study which was carried out in Central Mexico; particular emphasis has been placed on the technologies used and the human and other factors associated with them. A co-operative in the village is compared with other forms of co-operative organization found in Mexico, or elsewhere, and common features identified. Some of the factors which affect innovation in the village are described and possible explanations for the existence of limiting factors are suggested.

The concluding discussion draws together features of the villagers' behaviour and argues that their rationality has a proven survival value and that their caution when confronted with pressures to change is well justified. The thesis concludes by tentatively extending the findings beyond the boundaries of this particular village and suggests how they may have a wider significance.

D E C L A R A T I O N

I declare that this thesis has been composed by myself and that the work contained within it is my own.

G L O S S A R Y

Abogado - Lawyer.

Adobe - Earth blocks.

Ahuehuet - Type of tree (Nahuatl).

Alcabala - Transaction tax.

Alecrán - Scorpion.

Arriero - Mule or donkey drover.
Asseméléa Generál - General Assembly.
Audiencía - Colonial government in Mexico.

Ayudante - Aid.

Ayudante Municipál - Municipal Councillor.
Ayudantía Municipál - Municipal Council Building.

Bracero - Migrant worker.

Buéy - Bullock.
Burro - Donkey.

C.N.C. (Confederación Nacionál de Campesinos) - National Fieldworkers' Union.

C.O.N.A.S.U.P.O. (Compañía Nacionál de Supsidios Populares) - a state run company for the purchase and supply of basic foodstuffs.

Cacahuates - Peanuts.
Caciques - Derogatory (pre-Revolutionary) term for the rural elite.
Calmecae - Aztec School.

Calzones - Traditional white cotton trousers.

Camál - Flat plate for cooking tortillas.

Campesino - Man who works the land.

Cantina - Bar.

Carcél - Gaol.

Carga - 70 Kilogrammes.

Castas - Derogatory colonial term for non-Europeans.

Charro - A participant in the sport of horsemanship characterised by traditional dress.

Chozas - Sub-standard housing.

Científico - Scientific, a political philosophy which gained pre-eminence towards the end of the Díaz regime.

Compadre - Godfather, it denotes a deep friendship.

Compadrazgo - The institution and customs surrounding the compadre relationship.

Comisario Ejidal - Elected head of the Ejido.

Consejo de Vigilancia - Council of Vigilance, part of formal organization within ejidos.

Coyote - The animal and also a derogatory term for middlemen.

Criollo - Mexican born 'spaniard' in colonial times.

Cristero - A catholic based counter-revolution in the early 1930's.

D.A.E.S. (Desarrollo Agropecuario Ejidál de Sinaloa) - A state based organization for the promotion of ejidal agriculture.

Divididos - A comparative term used for non-collectivised ejidos.

Dominar - To dominate.

Ejido - Land allocated to villages in the Land Reform Programme.

Elote - Ear of maize.

Elotero - Device for removing grain from the ear.

Encomienda - Land grants made by Cortes.

Fiesta - Party or Fête.

Frijoles - Field beans.

Fundo Legal - A land allocation by the colonial regime.

Gachupín - Derogatory term for 'Spanish born' in Mexico in the colonial period.

Hacienda - Business and the dominant form of land holding throughout the Republican era until the 1910 Revolution

Hacendado - Hacienda owner.

Huaraches - Leather sandals.

Indíginas - A colonial term for the indigenous people.

Indios - Indians, also used as a term of abuse for campesinos.

Igenio - Sugarmill.

Jacál - Wattle-and-daub single-roomed structure.

Jornaleros - Day labourers.

Junta - Meeting.

Leperos - Lepers, also used as a term of abuse.

Macehuales - Pre-conquest commoner.

Machismo - The tradition of overt and agressive manliness.

Maguey - Cactus, the source of alcoholic beverages and fibres.

Maíz - The staple grain of Mexico since before the colonial conquest.

Mal Intenciones - Bad intentions, may be used to describe the honesty of intent.

Mano dé Obra - Labourers.

Masa - Maize dough.

Medidas - Methods.

Mente Cerrada - Closed mind, stupid.

Mescál - An alcoholic spirit.

Mestizo - Of mixed racial origins, the predominant group in Mexico.

Metate - Stone slab for grinding maize.

Milpa - Colloquial term for one's field.

Mole - Chocolate based savoury sauce with meat.

Montar el Bravo - To mount the bull, a part of all village fiestas.

Mortificarles - To humiliate them.

Municipio - Local council area.

Nahuátl - The language of the Aztecs.

Oficio - Official.

Organizados - A comparative term used for collectivised ejidos.

P.R.I. - Partido Revolucionario Institutionál.

Parcela - Parcel, term used to describe a field.

Partera - Lay midwife.

Peninsulares - Colonial term for those in Mexico born in Spain.

Péon - Hacienda labourer, also now used to describe day labourers.

Pequeños Propriedades - Small private landholdings.

Pilili - Part of the Aztec aristocracy.

Polîtico - Politician.

Pochteca - Aztec trading guild.

Proprios - Properties.

Pueblo - Village or people.

Pulque - An alcoholic beverage made from the sap of the Maguey.

Rancho - Small self-contained farm.

Reboso - Shawl.

Refrescos - Carbonated soft drinks.

Repartamiento - Colonial enforced labour system.

Salza - Sauce
Socio - Member.

Socio Delegado - Delegated member.

Sombrero - Hat.

Taréa - Task, also a term denoting an area of 0.1 hectares.

Tecuhtli - Aztec aristocrats.

Tequila - An alcoholic spirit.

Terracerra - Dirt road.

Thacolol - Hillside cultivation practice.

Thalmatl - Aztec landless class.

Tierra de Commun Repartamiento - Colonial communal land tenure.

Tierras Communales - Common lands.

Tierras Ejidales - Ejidal lands.

Titulos - Titles.

Tortillas - 'Pancakes' made from masa.

Tu - Familiar form of second person singular.

Usted - Formal form of second person singular.

Yunta - Ox team.

Yuntero - Ox team driver.

Zona Urbanizada - Area allocated for urban development.

F O R E W O R D

This work describes an attempt to examine the behaviour of the inhabitants of a long-established village in central Mexico. The principal aim of the study was to gain some insight into the way in which changes in the technology used by the villagers occurred. Within this examination several questions were always to the fore.

1. Were decisions made on the basis of consideration of alternative courses of action?

2. Was the particular choice obvious to the chooser? Was it equally obvious to the observer? What part was played by economic expectations, prestige, personal preference and simple whim?

3. Were influences against change those of a conservatism simply reflecting what had 'always been' or were they part of a conservatism which reflected a survival optimisation from an earlier period?

Within the context of the village it was impossible to isolate technical factors from their companion social, economic and historical ones. Ultimately, it is only possible to perceive any understanding of the rationale of such changes by considering all the factors impinging on the decision maker. This, of course, sets an impossible task for the analyst as each new decision point has a myriad of new and differing factors. Inevitably any analysis of such a complex situation will be less than perfect and must reflect the insight and intuition of the observer.

In visits to villages prior to my choice of Ahuehuetzingo as the location for my study I had seen something of the barriers to communication erected when strangers visited villages. As I had only eight months in Mexico available to me it was vital for this study that I should strive to develop a relaxed atmosphere between myself and the subjects of my interest as quickly as possible. The most likely stance to gain acceptance seemed to be to present myself to them simply as a pupil, knowing nothing of their way of life (as I truly did not), wishing to learn from them. Further it was my problem alone to earn their trust and to establish my bona fides in their society.

When I first met Santos, the Ayudante Municipal, in the village and indicated that I wished to study him and his fellow villagers he immediately asked me what I could do for them. The only answer I felt able to give with honesty was "nothing". He recognized that I was deliberately making no claims and had no wish to force anything upon them and accepted what I had said. Thereafter a firm friendship developed between us and he helped me in innumerable ways.

I was well suited to my self appointed role as pupil. My Spanish was far from perfect, and my knowledge largely irrelevant to their way of life. Where I could I joined in with their activities such as helping in the fields and running the water pump. For their part they showed me unstinting hospitality. They allowed me to partake of all the village activities including the privilege of

attending the village council meetings.

Most of the information I gathered was obtained informally by using a participant-observer technique whilst working and relaxing with them. I considered that it would be unwise to adopt a more formal approach to data collection as this would both strain the working relationship and be unlikely to yield more accurate information. Instead, whenever I felt the need for more precise information than arose in normal discussion, I used a 'key informant' technique, drawing from the depth of knowledge of a small number of villagers. Even so it was, at times, difficult to establish precise data as the villagers do not keep formal records of their affairs. It was only by constant cross-checking, and asking the same questions in different ways over a period of time, that some consistency was obtained. Though the resulting data is often less precise than would have been desirable I believe that such weakness does not substantially affect the principal findings of the study. My interest was oriented more towards the logic of decision making and to develop an understanding of the value judgments of the villagers rather than to undertake a precisely-timed census of village activities.

Technology in the context of this thesis is taken in its broadest sense to include not only devices but ways of doing things especially those related to economic activities or subsistence food production. A social innovation, such as the formation of a co-operative, is no less important in its effects on the returns to be made for effort than is the adoption of new fertilizers; in

fact the former may well determine the latter. No study of innovation could be made without considering examples of both types.

My relationships with the villagers clearly affected my attitudes in many ways. For example, I became resistant to the use of the word 'peasant' to describe the villagers of Ahuehuetzingo. The word is a precisely-defined technical term in the field of 'social anthropology' but in general usage it has connotations which may colour the image of the Mexicans I know. Technically it describes accurately the villagers; they are neither wholly subsistence farmers nor solely engaged in commercial farming. Their activities are peripheral to the mainstream of economic life of the country and they are unable to influence, to any great extent, circumstances outside the boundaries of their village. What it fails to do is to conjure an image of warm hearted, intelligent people who conduct their lives, and earn their livelihood, in as rational a way as any other section of humanity. 'Peasant' in English is too often used as a demeaning word or one of abuse. The villagers of Ahuehuetzingo call themselves <u>campesinos</u>, men of the fields, which is what they are.

To illuminate the text and to set the scene of the study more clearly than can be done using words alone a number of photographs have been included. These are in colour and show something of the village and its lands, and demonstrate especially vividly the effect of the changing seasons. They would lose some of this clarity

if reproduced in monochrome. Though this would not substantively affect the text the reader would have greater difficulty in setting the scene in his mind's eye.

Naturally, I have drawn from sources outside the village both to amplify particular points in the village study and to set into a wider context the observations and analysis. Though most of the work presented here relates to this one village, many of the findings will have a wider significance in that many of the villagers' experiences are similar to those of others both within and outwith Mexico. The conclusions that are drawn from this study, though they do not necessarily apply in all such villages, do have a potential utility which warrants consideration with regard to the problems encountered in the implementation of rural development programmes.

CHAPTER I

HISTORICAL PERSPECTIVE

INTRODUCTION

The past influences the present and largely shapes the future. Therefore, if we seek to understand the dynamics of change we must learn something of the antecedents of the situation under study.

Mexico's past has been turbulent. The creation of a national identity has been fraught with many conflicts. These still manifest themselves both consciously and unconsciously in a way that is uniquely Mexican.

Modern governments recall the Aztec civilisation to instil pride in the people for their Indian ancestry. The land reform instituted after the 1910 revolution drew ideas and ideals from the pool of experience of both pre-hispanic and colonial history. The present constitution in many aspects reflects much of Liberal philosophy evolved in the last century.

On a less conscious level many attitudes such as machismo and urban attitudes to the campesino are deeply rooted from colonial times. Concepts of time, too, are revealed in attitudes to punctuality which are totally alien to people from an Anglo-Saxon cultural background; even weddings customarily start late.

That history is an important cultural determinant

is evident, and this chapter is intended to provide a background, or introduction, to the observations and analysis of the succeeding chapters.

PRE-COLONIAL ERA

It has been estimated that when Hernan Cortés landed in 1519 the population of Central Mexico was between 19 and 28 millions.[1] He found a complex civilization based on military control but supported by trade connections and religion. Outside this central Aztec sphere of influence the Mayan culture flourished in the south in the Yucatan but to the north there was little other than desert and scattered tribal settlements.

The forefathers of the Aztecs were a Nahuatl speaking tribe which had migrated from the north and settled in Tenochtitlán, now the site of Mexico City, after defeating the remnants of the preceding Toltec civilization. By the beginning of the fourteenth century they were well established in this rich valley.

It was in the succeeding century that their imperialistic phase gained momentum. First the other Nahuatl speaking groups were brought under direct rule. The process then continued with the domination of adjacent ethnic groups who were tied to their Aztec masters by a tribute system. This income being used to finance the Aztec standing army.

The Aztec religious structure displayed the newness of the culture in that godlike effigies were taken initially from the Toltecs and then subsequently from the conquered peoples and incorporated into the pantheon.

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1. Borah (1969) p.205.

Domination was re-inforced by a brutal system of human sacrifice which demanded so many victims that often war was undertaken to provide the prisoners required for the ritual slaughter.

The social structure towards the end of the fourteenth century had ceased to be centred on tribal organisation and had become rigidly stratified around the imperial structure. Members of the nobility, the tecuhtli, who originally had been elected by their peers, were by this time appointed on a virtually hereditary basis. Their function in outlying tributary districts was to rule for the emperor and ensure that taxes were paid. With these positions went large tracts of land farmed by commoners for the benefit of the noble. These positions also held benefits for the children of the tecuhtli, the pilili, who were given important advantages over the rest of the populace. One such privilege was the right of access to the university, the calmecae, which taught many skills and crafts. The priesthood, too, was largely recruited from this class.

The bulk of the people were known as the macehuales. These were the workers and taxpayers of the society. Although not having full freedom of action the macehuál did have the advantage of being a full member of society including the right of participation in all public affairs. He also had access to land in perpetuity on a usufruct basis for himself and his sons. This right to land was a traditional one in Central Mexico where private property as such was unknown.

At a lower status than the macehuál was the thalmátl who, contrary to tradition, had no lands and worked where and when he could. This lower social position was reached in one of three ways: by being born into it; by being on the losing side of an expansionary wave; by electing to take up this position in society. The latter occured because of its one advantage, although the thalmátl enjoyed no privileges neither did he have any duties. So great were the burdens of taxation that by the beginning of the seventeenth century, if the Spanish had not invaded, this group would have been in the majority so fast had their numbers been rising.[1]

The lowest group in the social hierarchy were the slaves. They were sent to Tenochtitlán as part of the tribute from vassal areas, but some were free men who had sold themselves into service. Their position in society was rigidly regulated. A slave could marry a free woman, any children would be freeborn, and the slave could buy his freedom for the price originally paid for him.

A unique position in society was held by the traders, the pochteca, who operated as a guild. This group had a large measure of autonomy and made their own rules and regulations enforced in their own courts. They received these benefits and others, including monopoly trading rights between different cultural

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1. Cumberland (1968) p.28.

groups inside and outside the empire. They also acted as the eyes and ears of the emperor and many successful military operations were executed with the help of this informal intelligence network.

The technology used in the Aztec civilization was almost exclusively imported and incorporated into the craft structure by the calmecae. It is through such methods that the extensive urban drainage system of Tenochtitlán and the subsequent development of irrigation, were achieved. Notable for its absence was the wheel, for although its concept was known as evidenced by the discovery of wheeled toys on archaeological sites,[1] no practical use was made of it. This may have been the result of two factors, the lack of draught animals and a surplus of labour.

The principal crops produced were, as they are still for the campesino, maíz, beans, and chile. Also grown for use locally and for trade were cotton, tomatoes, henequin, cocoa, and fruits. Money as an abstract concept did not exist. Transactions were completed in the market place by the exchange of cocoa beans, copper or a turkey quill filled with gold dust, the value of which were stipulated by regulation.

With the development of the empire craftsmen in outlying regions were brought to Tenochtitlán. This increased the dependency of these peripheries on the centre to such an extent that at the time of the

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1. Alba (1967) p.14.

Spanish invasion most of the goods being 'exported' from Tenochtitlán were manufactured goods with essentially only primary products being 'imported'.

By 1519 most of the tribal barriers in the central region had been replaced by the social stratification imposed by the militaristic empire. The growing wealth of the pochteca might have upset this structure, replacing it with a society re-stratified around mercantile capitalism, but this conflict was still submerged. There was, however, a clear pattern of oppression of the majority sector of society evidenced by the 'opting out' of the macehuales. This together with the Aztec myth of a white god coming from the east may explain the comparative lack of resistance that Cortés experienced.

THE COLONIAL EXPERIENCE

Pope Alexander VI issued a Bull in May 1493 which was to have a profound effect on the history of America. This gave to the King of Spain, in recognition of his fealty to Rome, custody of all the 'western lands', to protect their inhabitants and educate them in the 'true faith'.[1] With this moral and political backing Hernan Cortés raised an expedition to conquer 'New Spain'.

Although Cortes had the blessing of the Court the expedition was funded privately with the intention of reaping rich rewards: thus the high moral justification for this invasion was somewhat overshadowed by the desire for financial success. The subsequent vigour of Cortes in the pillage of temples and the building of churches in their place, to ensure the breakdown of the religous / political structure of Aztec society, were justifiable on economic, strategic, and religious grounds.

The process of subjugation centred around the Church whose clerics very rapidly established a following by adapting orthodox Christian practices to suit the style of Aztec culture.[2] A distinct Mexican flavour to religious practice still exists throughout the country with the effigies often being, in themselves, the primary objects of worship.

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1. Herzog (1974) p.15.
2. Alba (1967) p.20.

Although the Spaniards relentlessly exploited the Indians throughout the colonial period they never denied them their humanity. Immediately after the invasion parts of the Aztec aristocracy were integrated into the immigrant culture. For a while a new school for the pilili was established by missionary clerics and flourished academically, but, inevitably, it was closed at a later date as a possible threat to the colonial authorities.[1] Many soldiers found the women attractive, hard working and loyal, and settled with Indian wives and fathered the mestizos who, centuries later, were to emerge as the dominant political group.

Contrary to the wishes of the King, when military victory had been achieved, Cortés granted to himself and to his men large estates, encomiendas. Experience with these in the Caribbean had led to gross exploitation of the indigenous peoples and in 1520 the granting of any new encomiendas had been forbidden. However, after the privations of the battles and the comparative lack of treasure, Cortés was forced, against his will, as he reported to King Charles, to grant encomiendas. To himself he granted the largest; his Indian charges numbered over 100,000; recent estimates put the number at over 200,000. To his followers he granted some 500 of different sizes depending on merit.[2]

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1. Cumberland (1968) p.53.
2. Alba (1967) p.25.

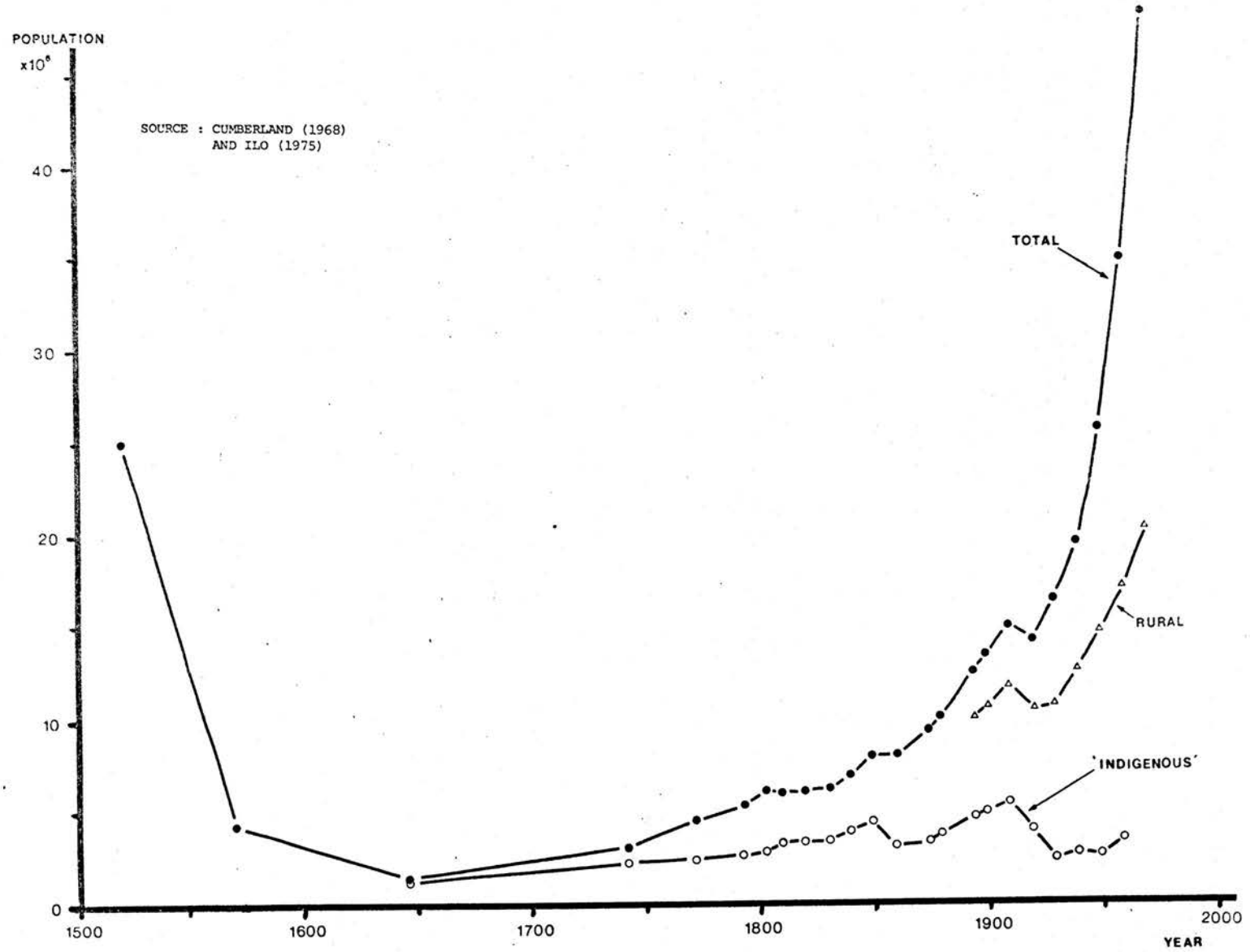

Fig 1. Population of Mexico

The encomendero had strictly speaking both duties to, as well as the right to expect benefits from, his charges. His duty was to protect and educate them in return for which he was entitled to collect a tribute from each head of family and demand labour. Initially little hardship resulted as the size of the immigrant population to be supported was very small when compared with the twenty million or more Indians in Central Mexico.[1] The main organizational significance of this arrangement was that it was in the interests of both parties to live in peace with each other; only if the Indian was to cultivate his land could he continue paying tribute.

By 1545 the system had become much harsher. The population had dropped to a quarter of its peak at the time of the invasion, mainly through sickness and privation.[2] At the same time the demands being made on the Indians was growing in absolute terms. This led to a proposal by the Crown that the encomiendas should be terminated with the death of the grantees. This, nearly a generation after most of the grants had been made, was bitterly opposed by the settlers. A compromise was reached and a royal decree issued abolishing the right to demand labour without a stipulated rate of payment, and limitations on the tribute claimable per Indian family. As with many royal proclamations these provisions were largely

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1. Borah (1969) p.204.
2. See Fig. 1.

ignored. It was not until towards the end of the century when the encomendero was in danger of losing his entire labour force due to the catastrophic drop in Indian population that these laws were widely complied with.

The significance of this non-compliance is revealed in figures which indicate that the population on the encomiendas jointly administered with the crown fell at a rate of between one third and one sixth that of privately administered ones.[1]

As the significance of the encomienda labour tribute declined, that of the repartamiento increased. This was for the regular supply of labour for work in the public interest at an adequate wage. In its original form, to provide for the construction of roads, bridges, churches and other public utilities, the system was quite acceptable and not dissimilar to the Aztec tradition of forced labour. Later, with the opening up of distant mines in unpopulated areas and the usurption of land requiring labour for harvesting, the load on the communities grew oppressively.

Like the encomienda, the repartamiento pre-dated the Spanish conquest of New Spain and was based on the premise that Indians would not respond to wage incentives and so had to be induced to work by other means. The system survived well into the seventeenth century

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1. Cumberland (1968) p.74.

and the abuses were sometimes severe. The wages received were far below subsistence level. The hardships suffered were aggravated by the declining population and the increasing frequency and extent of the labour demands on each family. It was the inefficiency and the unwillingness of the workers that finally ended the system. It became cheaper to hire willing labour.[1]

The scale of the population crash in relation to Spanish colonial rule can be seen in Figure 1. This played an important part in the gradual change in the seventeenth century from the encomienda to the hacienda. At the time of the invasion the density of population was such that there was no unoccupied land available. By the end of the sixteenth century when the grossly exploited population had dropped to a tenth of its peak with the consequential loss of encomendero revenues, much of the unused good arable land was seized for cultivation by the encomendero turned hacendado. New immigrants, too, joined in the rush to acquire land until, by the eighteenth century, land had become a scarce commodity. By this time the Indian and Mestizo population was increasing and the only way to obtain income was by joining the hacienda labour force.

This transfer of land to Spanish ownership was not sudden and the institution of the hacienda was much less overtly exploitative in its nature than

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1. Cumberland (1968) p.80.

the encomienda. Firstly, the lands expropriated were not normally in use at the time and so their loss to the Indian communities caused no immediate hardship. Secondly, they provided a source of employment and even protection against further social disruption. Even when the population started increasing the land the hacienda held had often been owned by the family for more than a generation and was theirs by indisputable legal title. This meant that when the hacendado provided a hut and employment to the son of a worker this could be looked upon by both parties as an act of benevolence.

A later and more socially damaging development was that of debt peonage. As early as 1601 the royal government had attempted to forbid the tying of workers to land and later forbade the lending of greater than a limited sum of money to an Indian and likewise the passing on of a debt from father to son, but both these ordinances were ignored.[1] The only effect of the credit limitation was to prevent Indians or Mestizos from purchasing land or attempting capital improvements.

Through the periods of the encomienda and the hacienda Indian villages still had some lands of their own. This land was central to their existence and it is this emotional as well as economic link between the campesino and his land that has so influenced Mexican

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1. Cumberland (1968) pp.82-83.

history. Gibson[1] described it as follows:-

"That land was important to Indians is obvious. Some of the most intimate and revealing documents of all Indian history are the native titulos for community land possession. The titulos were an Indian response to Spanish legalism. Their purpose was to integrate community opposition against alienation. They speak only sparingly, or not at all, of conquest, tribute and labour. They see the essential threat to community existence where it in fact lay, in Spanish seizure of land."

It was these same titulos that re-appeared in the twentieth century, having been carefully preserved throughout the rest of the colonial period and even through a hundred years of independence, to justify the claims of villagers for land usurped generations before.

Land tenure approved for the Indians by the Spanish administration was as follows:-[2]

1. The 'Fundo Legal'

This provided land needed for homes, primarily in the urban areas. This became especially important in 1547 when the crown decreed that all the dispersed indiginas in the mountains should come down into the towns to expedite their 'education and civilization'.

2. The 'Ejido'

This form of tenure was to provide villagers with land for their animals and firewood. This land,

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1. Gibson (1969) p.178.
2. Eckstein (1966) p.14.

was not normally seeded or fenced, and was held in common. (Following the 1910 revolution Ejidos in a variety of forms were re-established.)

3. The 'Tierra de Commun Repartamiento'

This provided land for cultivation and was considered the exclusive property of the village. The land could not be sold and was divided up for individual cultivation. The right to a parcel was hereditary and was forfeit only if the parcel-holder left the village or ceased to cultivate the land. The only difference between this and the pre-colonial practice in Central Mexico was that the redistribution of vacant parcels was controlled by the Ayuntamiento rather than the Council of Elders.

4. The 'Proprios'

These were lands cultivated, originally by the community, for the maintenance of public services. Later, with the growing shortage of land, they were rented to individuals to cultivate with the rent going to provide the village services required.

None of these forms of tenure permitted ownership of the land traditionally used by a village. This together with the credit limitations introduced for his benefit prevented the Indian from rising from his low social position. Although law expressly forbade the purchase or acquisition of these lands they were continually encroached upon. Often in the early period when land was plentiful these transfers were undertaken in collusion with villagers, but later all attempts at

land seizure were resisted to the best of their ability.[1]

Direct attempts by Spain to control the colony were frustrated from the first as when Cortes ignored the illegality of the encomienda grants he made. Throughout the colonial period this pattern continued with the laws and regulations being followed only when directly supervised by crown officials or when changing circumstances rendered compliance expedient. Even then corruption was so rife that even the enforcers themselves became party to the excesses of their countrymen.

Although direct control by Spain was never fully established the aspirations of the Spanish colonial policy did dictate the overall direction of the colony's development. It is fundamentally for this reason that Mexico did not develop along the same lines as the American colony to the north. The Spanish immigrant, far from being a refugee, had to prove himself not only a loyal citizen free from debt, practised in a skill advantageous to the building of a colony, but also his limpieza de sangre, freedom from taint or heresy.[2] Spain, therefore, expected the colony to become a stable and profitable part of her empire. To this end married men were encouraged to take their wives and children with them, but in practice few did. Von Humboldt in 1803[3] estimated that in Mexico City one in ten of the Spanish-born populace were women, and

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1. Gibson (1969) p.179.
2. Cumberland (1968) p.43.
3. Cumberland (1968) p.49.

less in areas remote from the capital. This, at a time when the colony was considered by the peninsulares to be not only wealthy but stable. A settler pattern of land tenure never emerged and so exploitation of the indigenous work-force became an essential part of the nation's development.

The crown, whilst in law trying to protect the indigene, encouraged his exploitation by maintaining a fiscal and trading system intended to extract the wealth of the country for the support of the Court and to finance Spain's military power in Europe. In the eyes of the government the prime economic activity remained the extraction of the mineral wealth, especially gold and silver. Even after metal extraction had taken second place to agriculture in economic importance within the country, its importance in the external economy was controlled by the trade pattern set by the crown.[1]

The most restrictive manifestation of this policy was the fleet system instituted originally to protect the treasure ships from pirates. Designed to be annual convoys bringing European goods to Veracruz and Mexican produce to Spain these were all too often quadrennial sailings. The unreliability of supply and the impossibility of maintaining market connections for Mexican goods effectively prevented the development of any commercial agricultural or industrial enterprise outside the very small internal urban market of Mexico.

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1. Cumberland (1968) p.105.

When the fleet system was finally abolished in 1778 trade increased rapidly. By 1789 mercantile activity in Veracruz had increased five times for the exportation of agricultural produce and doubled for imports. Between the years of 1790 and 1810 Veracruz accounted for nearly fifty per cent of Spain's total trade with her colonies.[1]

This continuing increase in the volume of external trade further emphasised the privileged position of the Spanish born colonials, the peninsulares, who had been granted a charter in the sixteenth century for monopoly control of the import trade. Although this charter was rescinded in 1778 the peninsulares retained control of the entire mercantile system until independence in 1821.[2] This monopoly control as well as their dominance of the colonial bureaucracy, fomented the hatred of the gachupin[3] by his less privileged colonial counterpart, the Mexican born 'Spaniard', the criollo.

The social stresses which had been building up between these social elite groups, the peninsulares and the criollos, finally became open conflicts in the beginning of the nineteenth century. By that time, due to a decision taken in the 1760's to conscript criollos into the Spanish army for the protection of the colonies, the dissident Mexican born 'Spaniards' had, for the first time, easy access to arms.[4]

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1. Cumberland (1968) p.105.
2. Cumberland (1968) p.326.
3. A derogatory name for the peninsulares.
4. McAlister (1969) pp.456-459.

In 1808 the Spanish Government was fully occupied with domestic problems posed by Napoleon's invasion and the imposition of Ferdinand VII. The Spanish Government in Seville maintained that Mexico was still under complete Spanish Jurisdiction; however, the Viceroy Jose de Iturriguray did not have the confidence of the peninsulares, who doubted his ability to counter the growing number of criollo plotters. In a coup in September the peninsulares removed him from office and replaced him with a sick old man, Pedro de Garibay. He, in his turn, was replaced at the request of the peninsulares by Archbishop Francisco Javier de Lizara y Beaumont.

The plotting and counterplotting continued with a criollo rising in Valladolid in 1809. This was put down militarily, without crushing the spirit of revolt. The various factions then re-organised themselves into a Committee of Correspondence with the aim of achieving a national rising powerful enough to take control without serious loss of life. The action was planned for 8th December 1810.[1]

In May 1810, whilst these preparations were under way, Lizara handed over the government to the Audencia, which was unable both to raise money to help fight the French in Spain, or to suppress the criollo discontent. So bad had the situation become that the peninsulares requested the Spanish government, by then pushed back to Cadiz, to send a new Viceroy to take control. This

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1. Cumberland (1968) p.116.

was done and on 25th August 1810 Francisco Xavier de Venegas, an experienced military officer, landed at Veracruz.

Even before he arrived in Mexico City the authorities in Queretaro received information of the forthcoming criollo coup and so ordered the arrest of the conspirators. The resulting panic changed the nature of the revolt. Father Miguel Hidalgo, one of the minor conspirators, called on his village congregation on 15th September 1810, to rise and overthrow their oppressors, the Spanish.[1] Thus the movement became one of the masses, the Indians and the Mestizos, instead of the planned smooth transfer of power from one elite group to another.

The untrained mob led by the priest first raided San Miguel for military supplies and then descended on Guanajuato, the richest mining centre in Mexico. The attackers, joined by the castas of the city, easily overcame the outnumbered garrison and in the ensueing slaughter some 400-600 peninsulares and criollos and about 2,000 of the inexperienced attackers were killed. For two days the victors sacked the city before finally leaving; one group headed for Zacatecas and the other for Valladolid.

The Zacatecas peninsulares fled the city, which the advancing army took with little resistance, and the remaining non-portable wealth was confiscated or destroyed. Valladolid surrendered to Hidalgo without a fight and the motley army of about 80,000 men headed

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1. Cumberland (1968) p.116.

towards Mexico City. They met and defeated a much smaller army of peninsulares near Toluca, although at great cost, with some 4,000 men being killed. Then, instead of continuing and taking Mexico City, in perhaps his greatest mistake, Hidalgo turned west towards Guadalajara.

This gave the peninsulares the time they needed to recover and in late 1810 General Felix Calleja led a campaign to recover the cities lost to the insurgents. The tactics used were brutal with many hundreds being executed in reprisal for the massacres by Hidalgo's forces.[1]

Hidalgo was no revolutionary by nature, and had not wanted a caste war. His preferred course of action had been for a criollo take-over with the subsequent raising of the population to equality by humanitarian paternalism. So, although he decreed the abolition of slavery and suspended the collection of the tribute, he did not propose any substantial reforms. His aims were to create a government that would "govern with the sweetness of parents, treat us as brothers, (and) banish poverty."[2]

His followers were more pragmatic and seized land and possessions as they conquered. The historian Lucas Aleman complained: "The Indians maintained possession of the lands which they seized in the various areas to which the revolution extended and they defended themselves

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1. Cumberland (1968) p.119.
2. Cumberland (1968) p.120.

when they were attacked."[1]

Some of the other leaders did profess distinctly more radical views. One of these was the Indian priest General Jose Morelos. He accepted a commission in October 1810 to operate in the south and became renowned for his revolutionary ideals, some of which were presented in his 'Medidas Politicas'.[2] These advocated confiscation of the property of the rich (with half going to support the military struggle and half to the poor) the destruction of records to hamper the oppression by the church and the state, and the division of the haciendas into small plots, "because the greatest benefit from agriculture is derived from a system whereby many can profit by dividing the land into small plots".[3] The measures were later condemned as communistic by Aleman[4] and by Viceroy Felix Calleja as "the most absurd, the most barbarious, and most idiotic plan ever written in the history of the universe".[5] Certainly the plan in many of its respects, viz the destruction of dams and aqueducts,[6] was not constructive in the short term, except in so far as it would prevent the re-introduction of the hacienda-produced cash crops which provided the financial support for the government. Although Morelos' medidas could be interpreted many ways, it was certainly his stated position that "the land and the income it produced should belong to those

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1. Cumberland (1968) p.122.
2. Timmons (1965) p.184.
3. Timmons (1965) p.184.
4. Cumberland (1968) p.124.
5. Timmons (1965) p.185.
6. Timmons (1965) p.184.

who worked the soil".[1]

The savagery of the war shocked the European population, both Mexican and Spanish born, and so united them against this common foe. Once re-united they used their superior resources of money, arms, and organisation, and inexorably broke the rebellion. Hidalgo was captured and executed in 1811, together with other leaders. Morelos, who used small, mobile guerrilla bands, survived until 1815, when Mexico again returned to relative peace.

Independence finally came in 1820. Ironically, rather than being a movement of reform, it was a conservative reaction to the increasingly liberal Spain. In early 1820 a liberal movement led by Colonel Rafael de Riego forced the Spanish crown to instal a constitutional government. This regime, by its programme of reforms, the lifting of press censorship, releasing of political prisoners, and the confiscation of church property, badly shocked the Mexican establishment. For these views the clergy had excommunicated many, including Hidalgo and Morelos.

So, finally, independence came almost without loss of life. Under the 'Plan de Iguala' with the banner cry of "Long live the sainted religion which we profess",[2] Augustin de Iturbide, a criollo officer of dubious honesty, led his followers into Mexico City. These included Vicente Guerrero and Guadalupe Victoria,

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1. Timmons (1965) p.195.
2. Cumberland (1968) p.128.

rebels from Hidalgo's ranks. Attracted by the statement of policy that "All its (Mexico's) inhabitants without distinction other than merit and virtue, are fit citizens to follow any line of employment",[1] they lent their support and so ensured the success of this essentially criollo and peninsular movement.

The leaders who took control once independence had been established took little note of the liberal ideals of Guerrero and Victoria, and attitudes towards the castas and Indians changed little or not at all.

The nation had been devastated by ten years of bitter struggle. The mining industry was in a state of collapse. Many of the mines never reopened, so serious was the flooding and general decay. In 1809, 25 million pesos reached the mints from the silver mines, by 1811 this had fallen to eight million, and by 1820 the output was less than 40% of the peak.[2]

Commercial agriculture had been severely damaged by loss of labour, the 'scorched earth' policy of the rival armies, and by the seizure of animals and crops to feed the armies. Griffin[3] maintains, with some justification, that subsistence agriculture was largely unaffected. Trade was difficult in the years before 1820, with roving bands of thieves. Local army chiefs frequently monopolised crops, further inhibiting trade and forcing up prices.

Capital, too, was irretrievably lost, with the

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1. Cumberland (1968) p.128.
2. Cumberland (1968) p.133.
3. Griffin (1967) p.48.

majority of peninsulares leaving after independence for Spain, taking with them their wealth. The country, therefore, in desperate need of investment, found itself short of capital and the government short of funds. With trade depressed, the alcabala[1] raised in 1820 was less than one-fifth of the pre 1810 level.[2] This inhibition of trade continued for the next fifty years, and the shortage of funds that bedevilled the Mexican government resulted eventually in military conflicts due to unserviced foreign loans.

The next fifty years of government was confused, with no clear leaders or policies emerging. In the period, over thirty different presidents led more than fifty governments with no one occupying the presidential chair for more than two years.[3] With such instability in the executive it is hardly surprising that no successful fiscal policy emerged. The continuous deficit of the treasury was financed by duties of 50% to 60% on imports, and exports which produced 80% to 90% of normal revenues topped up with foreign loans to cover governmental expenditure.[4]

Little of the revenues of the government went into productive or social investment in this time. Inadequate communications, one of the primary obstacles to economic development, were not improved until the second half of the century. Carl Sartarius commented in 1850,

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1. A tax on each sale of an item with a cummulative effect as the item changed hands two or more times.
2. Cumberland (1968) p.137.
3. Cumberland (1968) p.141.
4. Cumberland (1968) p.146.

"Nothing is done in the way of constructing roads, or very little indeed, whilst tolls are called for, without the money being applied to keeping the roads in repair, although the vehicles may be every moment in danger of turning over or sticking fast in the mud."[1]

In the private sector, too, there were problems of capital shortage. Due initially to the exodus of the richest group to Spain this deficit was further compounded by the lack of private banks. Indeed, no private bank was established in Mexico until 1864.[2] Capital, therefore, was expensive and only obtainable through non-institutional means or foreign loans.

Even with such disorder some economic development took place in this turbulent time. Mining was, of course, the most attractive investment to the foreigner, and British mining agents were resident by 1824, the year before Britain recognised the newly independent state.[3] By 1868 the level of mining again reached that of 1808, and it has been estimated that the export of precious metals between 1821 and 1867 accounted for between 50% and 60% of the value of all imports.[4]

Agriculture recovered sufficiently to supply the domestic market but any surplus was unsaleable because of transportation costs. The situation was one of recovery to the pre-revolutionary level of production but not beyond. The response of a <u>hacendado</u> in 1841, when asked by Madame Calderon why he did not use

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1. Cumberland (1968) p.157.
2. Cumberland (1968) p.155.
3. Gilmore (1957) p.213.
4. Cumberland (1968) p.148.

irrigation, was typical: "...from this estate to Mexico is thirty-six leagues ...a load of wheat costs one real a league ...so that it would bring no profit if sent there."[1] His hacienda to Mexico City was only half that distance in a straight line, but the road took a different course. True, by 1865 a rough road system had been built by hired and effectively repartamiento labour, who worked for exemption from military service, but with scanty budgets the contractors could do little but follow the contours of Mexico's difficult terrain. Typically an arriero would charge 30 centavas per kilometre per tonne[2]; thus long distance transportation was limited to high value durable goods.

As might be expected in these conditions agricultural production expanded at a rate roughly proportional to population growth. However, exports of some agricultural products increased rapidly with hides being the most important. These increased twentyfold between 1827 and 1870, fibres increased twelvefold, and lumber sixfold[3] in response to the rapid industrialisation in Europe and North America. Cotton cultivation was encouraged by the government, but with little success because of the costs of transportation. In 1850 only about a third of the national requirements were produced[4], the rest being imported.

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1. Cumberland (1968) p.158.
2. Cumberland (1968) p.160.
3. Cumberland (1968) p.164.
4. Cumberland (1968) p.163.

The greatest industrial growth was in the textile industry which, encouraged by the first government lending bank set up in 1830,[1] by the middle of the century supplied just under half the domestic market. Mechanization of the industry reduced the cost of cloth by a third, but even so it remained about 50% dearer than the imported product from the United States or Europe.[2] Power, as well as transportation, remained a primary block to industrialization. Until the advent of the oil age and with no accessible coal reserves, water and wood were the only significant power sources available. Often these were remote from both the market and the source of raw materials.

As was noted earlier, not only was the economy of the country in turmoil, the political climate was unsettled. Previously, all political activity had been in response to outside direction - usually against the viceroy and his representatives. There was now a need not only to create a nation, rather than a colonial appendage to the metropolis, but to create a political structure capable of establishing national objectives and directing the country towards them.

From the first there were two main political philosophies: one conservative, believing in central control by a natural elite with the support and participation of the Church, and the army; the other liberal, believing in the basic equality and perfectability

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1. Cumberland (1968) p.167.
2. Cumberland (1968) p.168.

of man, federalization and secularization of all aspects of government. These two streams of thought continued in evolving forms until the 1910 revolution.

It was the corruption and ineptness of Iturbide that gave the Liberals their first chance to establish themselves in 1824, when after a military coup a Federal government was established under the Presidency of Guadalupe Victoria, and a Liberal constitution introduced. In an attempt to re-vitalise the Mexican economy loans from Britain were negotiated (even before independent Mexico had been officially recognised)[1] and foreign immigration encouraged, especially into the underpopulated northern territory of Texas.

It was this migrant population that later withdrew Texas from the Federation. Nine years after this, in 1845, Texas was admitted into the United States sparking off a war in which Mexico lost half the territory she held at independence for a compensation of 15 million pesos.[2]

Previous to this war, Mexico had suffered two other interventions which had been repulsed, by Spain in 1829, and by France in 1838. As well as this, internal conflicts continued throughout this period. It is hardly surprising to find that the population grew very slowly, immigration was minimal and the economy struggled. Mexico was a country marking time.

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1. Cumberland (1968) p.144.
2. Alba (1967) p.62.

The Church had been conspicuous in its support for governments or oppositions during these difficult years. Its position was crucial. In plain economic terms it was more powerful than any government. Its income at the time of independence was five-times greater than the State.[1] The Church, however, consistently refused to help financially, unless coerced into forced loans, and fought with all weapons at its disposal at any attack on its entrenched position.

From 1829, when the Church appeared to connive in the capture and execution of Vincente Guerrero, who although a radical and liberal was devoutly Catholic,[2] the Liberal movement became increasingly anti-church. These sentiments were fired by the refusal of the church to make a 15 million peso loan in 1847 to aid the army in its fight against North American intervention.[3] In contrast, the Church openly supported Conservative policies, such as property and income qualifications for holding office, and the suppression of a free press. The inevitable conflict became more open and more bitter with time and was not resolved fully until the 1930's.

Liberal dominance came about in 1853 after the infamous leader Santa Anna declared a 'perpetual hereditary dictatorship' with himself as the patriarch.[4] This coalesced the Liberals into a determined opposition

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1. Cumberland (1968) p.177.
2. Cumberland (1968) p.181.
3. Cumberland (1968) p.183.
4. Alba (1967) p.63.

and, following the declaration of their 'Plan de Ayutla' in 1854[1], they fought a bitter civil war. After three years of fighting, Benito Juarez emerged as the Liberal leader and became undisputed President of the Republic in 1861.

With the domestic political situation resolved, but with the treasury and government still in chaos, the French invaded. The British and Spanish governments both supported the action because of their unserviced debts. Five years of further fighting followed until finally the French withdrew under the pressure of military defeats and diplomatic persuasion.

The 'Restored Republic', at first under Juarez and then under Sebastian Lerdo de Tejada, at last set in motion its programme of reform. The constitution of 1857 had set out the Liberal platform. As summarised by Scholes this included that "No man could be enslaved nor could he be imprisoned for debt; education should be free; every man could embrace the profession, industry or work he desired; personal service should receive just payment; with certain limits freedom of the press, of speech, and of association should prevail; any man who wished to do so could carry arms; titles of nobility should be prohibited; ...the death penalty should be abolished for political crimes; there should be no monopolies; and property should be subject to eminent domain."[2] The aim was to progress towards a

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1. Scholes (1952) p.1.
2. Scholes (1952) p.10.

free capitalist economy based on equality of opportunity and with property being sacrosanct. With regard to land reform, it was hoped to develop a society based on small individual privately owned land holdings. All notions of communal ownership or of special protection for groups (whether Indian or Church) was alien to this philosophy.

From the start this ideal of smallholdings faltered. In 1863, to raise money to fight the French intervention, Juarez auctioned vacant lands to individuals and companies. Nearly two million hectares were sold in blocks averaging over 5,500 hectares, raising less than one and a half centavos per hectare.[1]

The first major assault on the Church as an institution was in the enactment of the Ley Juarez abolishing the ecclesiastical courts thus giving, in principle, all men equality under the law. This was followed by the Ley Lerdo which outlawed corporations, religious or otherwise, from owning property other than that indispensable to their immediate needs, such as the sites of churches. The law stated that all such land should be sold at public auction unless previously bought by tenants.[2] The Church then, lost its land, but was fully indemnified as was provided for in the constitution.[3]

The process of reform, therefore, was not redistributive. Rather it was simply an exchange of assets between those who had money and those who had land.

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1. Cumberland (1968) p.165.
2. Alba (1967) p.65.
3. Scholes (1952) p.12.

True, it did begin to change the nature of agricultural production as it extended and strengthened the *hacienda* system, often, in fact, displacing the previous tenants who had not the capital to purchase the land they worked.

Ley Lerdo was also applicable to village *ejidos* which were still farmed communally, as these were owned by the village as a corporate entity.[1] This too worked against the survival of the smallholder because, although he became the titleholder of the plot he had farmed by right, he was now free to sell it. More to the point it now became forfeit if he contracted a debt he could not repay. This, in a credit economy based on moneylenders not banks, was all too commonly the fate of the *campesino* unfamiliar with the implications of ownership of land, and with a legal system not wholly in sympathy with his situation.

So, by steadfast refusal to protect those open to exploitation, at least in the short term, and unwillingness to apply redistributive measures, the Liberal policies for a nation of smallholders striving industriously for their own betterment failed - as it was bound to do even with the most benign of motives. True, Juarez, after the French intervention, did attempt to protect the villagers by not applying the law, but it was too little too late, and after his death the process was accelerated.[2] The concentration of land

1. Cumberland (1967) p.291.
2. Alba (1967) p.75.

and its changing patterns of use triggered the build-up to the 1910 revolution as the process, short of violence, was irreversible.

With peace, the economy started to recover with investment both from the release of capital by the sale of the church lands, and from foreign investment. Government reforms enacted to stimulate the economy included simplification of the tax structure for gold and silver mines and, at last, the abolition of the *alcabala* where it still remained.[1] The majority of the population, the Indians and the *Mestizos*, did not benefit greatly from these changes. Real wages remained static or declined and in most areas there was a surplus of labour. In the rural areas those displaced by the land concentration became part of the captive labour force of the *hacienda* with its continuing debt peonage and wages in the form of credits for the company shop. Those who left for the cities joined the ranks of the *leperos* who found income where they could, often in crime, and who were infamous for being drunkards. Many visitors commented on this degrading spectacle, few realised that calorie for calorie, *pulque* was cheaper than *maiz*.[3]

From 1867 to 1876, Juarez and then Lerdo ruled Mexico in the first stable political alliance since independence. There were still many difficulties, such as the continuing high level of banditry, and its effects

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1. McCaleb (1921) p.127.
2. Cumberland (1968) p.172.
3. Cumberland (1968) p.173.

on travel and trade, and the alarmingly high overseas debts. In 1850 overseas debts had grown to 56 million pesos and by 1867 were 375 million pesos.[1] Government income from normal tax sources was still in 1876 only about 15 million pesos,[2] amd so much of the revenue went to service these debts. Lerdo was not a success as president, and in the period of his presidency (between 1872 and 1876) managed to completely alienate his supporters. When he put himself up for re-election, Porfirio Diaz on a stance of 'Effective Suffrage and No Re-election',[3] easily overthrew him. He remained the dictator of Mexico until he himself was overthrown in the 1910 revolution by Madero, under the banner of 'Effective Suffrage and No Re-election'!

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1. Cumberland (1968) p.147.
2. Cumberland (1968) p.232.
3. Alba (1967) p.77.

PORFIRIATO

Porfirio Diaz brought to Mexico a period of apparent peace. Banditry was all but eliminated, the economy flourished as never before and the industrial revolution at last took hold in Mexico. The only people who did not benefit from the regime were the poor whose position became gradually more and more desperate.

The mass of the population, according to official doctrine, as propounded by Cumberland, "could not work efficiently, they were dirty, vicious and lazy, they had to be taught obedience, they would not save money because they were drunkards, and whatever wage they received was probably more than their productivity deserved. The only salvation for Mexico lay in attracting Catholic European immigrants whose industry and intelligence would transform the land."[1]

The philosophy of the regime was Liberal, but with a vicious twist which negated Article 1 of the 1857 constitution, which stated, 'The Mexican nation recognises that the rights of man are the base and object of social institutions, consequently all the laws of all the authorities of the country must respect and defend the guarantees granted under this constitution.'[2] This negation improved the positive aspects of the Liberal reforms but worsened the bad. The way was clear to dispose of the 'Indian' where he obstructed 'progress'.

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1. Cumberland (1968) p.191.
2. Scholes (1952) p.10.

Garcia Cubas wrote in 1870 "...of the decadence and degeneration in general of the indigenous race and the few elements of vitality and vigour that it offers for the Republic's progress...",[1] and further advocated the necessity of immigrants to create racial mixing to strengthen Mexico's human resources.

The resultant 'Social Darwinism' gave licence to many abuses and deprivations and the philosophy became self-fulfiling. This lack of care is reflected in the mortality statistics. On average in 1893, 439 of every 1,000 live born children died before the age of one. In 1910, 50% of all houses were classified as chozas, virtually unfit for human habitation, and in Mexico City 16% of the population had no home.[2]

Diaz considered development for the masses, but it was in terms of the economy rather than in terms of improved social conditions. This is most clearly revealed by a statement of policy issued in 1877 by Diaz: "The President, being desirous of promoting the well being of the labouring classes, has considered it his first duty to get in touch with the sponsors for those classes - that is to say, with farmers, miners, industrialists, and merchants of the country, to the end that they themselves make known their necessities and the best means of satisfying them."[3] It was not considered necessary to communicate directly with the labouring classes.

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1. Powell (1968) p.21.
2. Cumberland (1968) pp.191-2.
3. McCaleb (1921) p.149.

The desire for immigrants was reflected in official attitudes towards them, the provision of lands at a low price, exemptions on import duties, ease of becoming a citizen and in a generally fawning attitude to foreigners and all things foreign. The elite of the country had by then started looking outwards towards Europe for its identity.

To provide land for these proposed immigrants it was decided in 1883 that a National Survey should be made. This was to establish the extent of the unoccupied lands and so also, by elimination, determining what lands were 'legally occupied', in having a valid deed of ownership. Surveys were to be carried out by any interested organisation and in return for such work they were to receive one-third of available land surveyed. The same law enabled the government to sell the rest at fixed prices in blocks of up to 2,500 hectares. All such lands should have had at least one 'colonist' to every 200 hectares. In 1894 the limitation on personal holding was deleted as being unenforceable and the result was that some land holdings were in excess of 1.2 million hectares. By the end of the Diaz regime one fifth of the national territory had been surveyed, raising a mere nine million pesos, so low was the selling price.[1]

The effect on the ejidos is easily perceived. The burden of proof was on the occupant of the land being surveyed. It was insufficient simply to

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1. Cumberland (1968) pp.198-9.

establish that the land had been used for generations by a community or family; documentary evidence of ownership was necessary even if this had been issued by Cortes. Frequently no such evidence was in existence. Often, too, documents were destroyed by the surveyors, so disenfranchising the rightful owners. Towards the end of the regime so blatant did these abuses become that they were perpetrated openly or with the connivance of the courts.[1]

By 1910 less than 2% of the population held the titles of all the individual land holdings,[2] and 3,000 families owned half of Mexico.

Although ownership patterns changed, the vast majority of the _haciendas_ remained functionally as they traditionally had been- semi-subsistent units providing status and income for their owners in Mexico City. Rarely was any experimentation carried out and frequently vast areas were left fallow. As transportation improved some change followed, but mainly towards producing export crops for foreign markets.[3] The spectre of starvation, for the first time in Mexican history, became a reality.

With 50% increase in population during the Diaz regime _maiz_ production fell from 2.5 million tons in 1877 to less than two million tons in 1910- a 50% per capita reduction. The production of _frijoles_ (the major source of protein for the poor) fell to about

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1. See Lewis (1969) pp.129-132.
2. Cumberland (1968) p.202.
3. Cumberland (1968) p.204.

75% of the production in 1877. Total foodstuffs produced in 1910 were about 85% of the tonnage produced in 1877. Although importation of food increased it did not compensate for this drastic drop in production.

The only major comestible to have an increased production was that of alcohol, especially pulque and the other alcoholic beverages of the maguey cactus. In 1864 the capital had 51 cantinas; by 1900 it had 1,300, enough (it has been calculated) to hold one-fifth of the capital's population![1]

This demand for alcohol gives a strong indication of the desperation of the populace, and is perhaps the most classic symptom of social malaise in Mexico.

Diaz left as least one useful legacy of his regime - the railways. Soon after becoming President he released a statement of policy which reveals his concern with the problems of communications, especially in view of the high unemployment and flagging economy - "In the opinion of the President, what the country most needs is the construction of cheap railroads; for he believes that once a system of railway lines has been established with low freight rates for national products which can be yielded by our rich soil will be profitable; and in a short time this ruined country may be regenerated. Inspired, therefore, by these patriotic ideas, he proposes to do everything in his power to bring about the construction of railway lines in Mexico..."[2]

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1. Cumberland (1968) pp.204-5.
2. McCaleb (1921) p.148.

It was in his first four year term that Diaz established the framework for rail developments. Initially there was a reluctance to let foreign investors come and build railways, as previous experience had shown the power they could wield as owners of the sole cheap means of transport. National capitalists were unwilling to invest. As one legislator explained, the expected rate of return for Mexican capital was 12%, a railway gave only 6%, but Europeans normally got only 3% from their investment and so were naturally willing to build railways in Mexico.[1] Whether this is the correct reason or not, the government in the face of reluctant local investors had to plan to build the railway itself. The attempt failed because of lack of enthusiasm and inexperience in the laying of railway tracks.

In the end the only way that Diaz could achieve his goal was to offer concessions to foreign companies. This he did, whilst attempting to limit their power by offering subsidies with stipulations that East-West tracks should be laid before North-South. These terms were accepted in 1880 by three American companies, and so began the 'great push' with the vast 'Central Line', 2,000 kilometres long, being opened in 1884, in a third of the time allocated for completion.[2]

The system of concessions had the merit of speed and technical proficiency. Unfortunately, and not unexpectedly, the companies proved much more enthusiastic

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1. Cumberland (1968) p.212.
2. Cumberland (1968) p.215.

in the construction of the North-South profitable, export orientated lines, than they did for the domestic infrastructure cross-routes. Consequently, many cities were not directly interconnected as, for example, Durango and Mazetlán, only 160 kilometres apart as the crow flies, but 1,600 kilometres by the shortest rail route.[1] The stimulus that this improved transportation gave was consequently directed towards exportation rather than to domestic economic activity.

Another aspect of this system of subsidies was that it invited corruption. It has even been suggested by Turner that this was done with the connivance of Diaz himself, who used the money to buy allies and reinforce his political machine. In his first four years of office he passed sixty-one railway subsidy acts with all but a handful going to state governors.[2]

In 1908 Limantour, the finance minister, announced the government's intention of nationalising the major lines. This was done in agreement with the companies. Credit bonds, guaranteed by the government, amounting to over a hundred million pesos, were issued for the purchase of the stocks.[3] In his report to Congress Limantour admitted, "The location of the lines leaves much to be desired, whether one considers it from the point of view of the return on capital invested in them, or in terms of the interests of the regions which the lines traverse. Every day we resent more and more the

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1. Cumberland (1968) p.215.
2. Turner (1969) p.269.
3. McCaleb (1921) p.187.

lack of wisdom in having begun the construction of trunk lines without having a well considered general plan."[1]

When Diaz seized power foreign debt service claimed a large proportion of revenues. In the first few years little direct action was taken to overcome this problem, but as the economy grew, so, too, did the revenues. By 1884, when Diaz returned to power after the presidency of his 'puppet', Manuel Gonzal, the situation was sufficiently stable for him to introduce extensive reforms to reduce expenditure.[2] These were so effective in improving Mexico's credit-worthiness that in 1888 a loan was secured from a group of German bankers to extinguish the high-interest floating debts that had bedevelled the economy for more than half a century.[3] Mexico had, at last, graduated into being one of the respectable and secure investment areas in the world. From this time the budget remained buoyant until the change to the gold standard in 1905, when the subsequent fluctuation in the price added fuel to the political crisis that preceded the revolution.

Following this stabilisation of the economic environment, industry, at last, began to flourish. Broadly based on import substitution, the expansion depended more on claiming a greater share of existing markets than in increasing the absolute size of the market. The declining value of silver, to which the

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1. Cumberland (1968) p.220.
2. Cumberland (1968) p.190.
3. McCaleb (1921) p.158.

peso was pegged, in world markets also aided this development by encouraging foreign investment and providing a degree of protection to the home producer.

The textile industry, which by 1889 supplied 68% of the domestic market, flourished and by 1911 supplied all but 3%.[1] Similarly, the production of sugar, chemicals, and cement expanded. Light industries flourished, with over two-thirds of the necessary capital coming from within Mexico.[2] Because of the nature of the industrialization, prices neither fell significantly nor wages increased. Moreover, in this period not only did the proportion of the work force engaged in non-agricultural activities decline, but real wages also fell by about 15%.[3]

Such industrial development, then, can be viewed as being a process of capital formation, based on the returns from an existing market, and exploitation of the increased returns of machines over labour. Thus, an increasingly wealthy Mexican capitalist elite emerged and soon became politically entrenched. Their influence, allied with that of the traditionally conservative landowners, overwhelmed much of the enthusiasm for the creation of a strong and extensive bourgeoisie wedded to competitive capitalism, which had been the goal of the early liberal reformers.

Throughout the regime, even though judgements were often dubious and arbitrary, great importance was

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1. Cumberland (1968) p.222.
2. Cumberland (1968) p.223.
3. Cumberland (1968) p.224.

placed on the judicial system and the right of every man to have a hearing in court. The President himself was the final arbiter able to modify any judgement. As Lewis quotes Pedro Martinez as saying, "It is true that we were almost enslaved, but don Porfirio was don Porfirio and his was a true government. There were not so many little governments then... or so many courts to fatten themselves. There was only don Porfirio and although he favoured the rich, laws were obeyed and the poor got justice."[1] This judicial style at least gave those who thought they had been wronged the possibility of redress. As long as at least occasionally justice was done, and seen to be done, social order was maintained.

Towards the end of his regime Diaz and the organs of the state were seen to be lining up more and more behind the cientifico banner. In its most aggressive and extreme form this represented itself as a form of 'Social Darwinism' by which the excesses of exploitation could be justified. The poor, it was rationalised, were poor because they didn't want to help themselves and so they deserved to be exploited, as it was for the general benefit of the country. More and more the judgements of the courts were influenced by such views. When one group of villagers in Morelos appealed against a land seizure by a hacendado they were fined heavily by the court for questioning the integrity of a great land-owner. The chief appelant was later arrested, land

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1. Lewis (1969) p.129.

titles were seized, and the man imprisoned in Quintana Roo.[1]

In industry, too, dissatisfaction was mounting and, encouraged by a harrassed radical press,[2] labour organisations, virtually unknown before 1900, began to be formed. In 1907, mill workers in Puebla went on strike for better working conditions and pay. When they refused the management's offer of reducing the working day to twelve and a half hours, troops were called in, several hundred strikers were shot down, and the strike broken.[3]

Although on the surface Mexico was affluent and stable, tension was mounting in many sections of society; revolt was imminent.

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1. Womack (1972) p.80.
2. Cockroft (1968) p.94-102.
3. Cumberland (1968) p.226.

REVOLUTION 1910 - 1920

The turn of the 20th century was, to many wealthy Mexicans, a period of increasing affluence and stability. Mexico's standing in world financial circles was strong, and investment was progressing; the country, at last, was apparently entering into an era of continuing prosperity, and approaching industrial 'takeoff'. Politically, Diaz, now in his seventies, was still firmly in control and although some opposition was forming it was readily controlled by recourse to the law, or suppressed by force.[1]

The problem which became increasingly pressing to the cientifico clique advising Diaz was how to achieve a peaceful transfer of power on his seemingly imminent death. This was crucial for the continuance of the process of development which the cientificos confidently believed to be the swiftest way for Mexico to enter the 'modern world'. Their solution was the election of Ramon Corral, the cientifico candidate, to the position of Vice-President in 1904;[2] a post specially re-created for him.

Many Mexicans, both inside and outside political circles, were rankled by the appearance of the new Vice-President, as Corral had no popular appeal or power base. Economically the country was in stagnation with the domestic market near saturated.[3] In addition, a series of financial crises were having influence on

1. Cockroft (1968) p.99.
2. Cumberland (1952) p.12.
3. Cockroft (1968) p.41.

Mexico's standing as a good investment risk. Many people were disenchanted with the old men in power and their stale policies. Change, almost any change, was beginning to appear desirable.

Diaz himself triggered the activities which finally led to his overthrow and exile. In February 1908, in an interview with James Creelman of Pearson's Magazine, probably intended to boost his image in the United States and to bring his opponents out into the open, he announced his resignation as from the end of his term of office in 1910.[1] To the disappointment of many, but to the surprise of few, he was 'persuaded', in May 1908, of the 'necessity' of accepting another presidential term.[2] Although no change in the political situation appeared to be anticipated by Diaz, the strength and confidence of the opposition had been profoundly affected. At last it appeared that Diaz had recognised the right of an opposition to exist and all the groups and fractions could start to plan for that change.

Some saw the process as one necessitating conflict and, even before Diaz gave 'permission', advocated radical reform programmes to be instituted on the fall of Diaz.[3] The most stable of these groups was the Partido Liberal Mexicano which in its programme dated July 1906 proposed changes to the constitution more radical than those finally set down in its re-writing in

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1. Cockroft (1968) p.163.
2. Cumberland (1952) p.48.
3. Cockroft (1968) p.131.

1917.[1] The party members who set out this document never themselves became revolutionary leaders, but their radical influences progressively influenced the course of the struggles.

Others saw the process of change as being evolutionary and without the conflicts which others saw as inevitable. Such was the view of Francisco I. Madero who, coming from a wealthy family, saw no advantage in disruption. Wishing to see political change, he published a book early in 1910 entitled La Succección Presidenciál en 1910 which, whilst not being directed at Diaz personally, criticised the practice of re-election in a democracy. He did not hope to achieve the resignation of Diaz but to influence him to allow free elections for all lesser posts, including the Vice-Presidency, thus ensuring a popular government on the President's death.[2]

The book had no great literary merit but did gain wide circulation and coalesced opposition to Diaz regime under the banner of 'No re-election'. For some time politics centred around the election for Vice-President and, as Diaz declared no personal support for any of the candidates, there were hopes for free elections. Diaz, too long the despot, finally came down in support of Corral's re-election and open opposition became the only course left for the 'No re-electionists' to take.

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1. Cockroft (1968) pp.239-245.
2. Cumberland (1952) p.61.

By a process of elimination rather than through the appeal of his ideas on reform, Madero was selected as presidential candidate by the newly formed Anti-re-electionist Party, with Dr Vazquez Gomez as his Vice-Presidential nominee. Their programme proposed no major reforms apart from the correction of injustices of the past for those whose land had been illegaly taken, and the declared intention to replace the military tradition of Presidential succession with a democratic one based on the principles of no re-election.[1]

As the basis of the campaign was essentially against the institution of the Presidency, as personified by Diaz, rather than the presentation of alternative policies, it became increasingly bitter. For the first time crowds of people were able to voice opposition and, as the inevitable repression increased, the Central Committee of the Party even feared premature revolt.[2] In June 1910, with Madero's support growing, he was arrested. Even this did not dampen the ardour of his party, who continued to campaign on his behalf, with 'Maderista' clubs being formed throughout the country.

In July, amid a multitude of claims by Anti-re-electionists that the polls had been rigged, Diaz and Corral were declared to have been elected and, in September, the Congress after considering the claims

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1. Cumberland (1952) p.107.
2. Cumberland (1952) p.109.

duly confirmed their election.[2] Madero, having been released from prison on bail after the elections in July, finally decided to revolt and escaped north to San Antonio, Texas, to make his plans.

Following the Mexican tradition, a plan for future action was published and signed by its leading adherents. This document, the Plan de San Luis Potosi, simply declared the recent elections null and void, named Madero as provisional President, and stipulated new elections to be held on the occupation of Mexico City. Diaz and his ministers were to be tried by a civil court. Perpetrators of activities contrary to the rules of war were to be given a summary trial on capture. The plan merely laid out the framework for gaining power to permit free elections on the basis of no re-election; no fundamental changes in the manner in which society functioned were anticipated.

Madero's military campaign to overthrow Diaz started in November 1910, and immediately suffered a number of defeats at the hands of the Porforista armies; effective fighting only being maintained by the forces of Pascual Orozco, in Chihuaha and by the Partido Liberal Mexicano. These groups were the only ones with military experience from earlier unsuccessful attempts to incite popular rebellion.[2]

Gradually the campaign intensified with more forces entering into the battle against Diaz. In the

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1. Cumberland (1952) p.117.
2. Cockroft (1968) p.177.

North, Pancho Villa, with an independent force, captured San Andres in late November.[1] Emiliano Zapata in the South, who had taken up arms in the summer of 1910 over a local dispute in the state of Morelos, declared for Madero in March 1911.[2]

In early April, at last realizing the gravity of the situation, Diaz attempted to defuse the revolt politically. With a re-formed cabinet he not only proposed wide judicial and electoral changes, but even recognised the need for land reform.[3] This was a self-indictment that could only be interpreted as an admission of weakness by his opponents.

By May the government's position had become hopeless. Many major towns, including Ciudad Juarez, had fallen and a secure route for importing arms and ammunition from the United States had been established. Madero's strength was even greater than he knew as many groups operating independently on local issues were threatening federal forces throughout the country.

On 17th May Diaz announced his intention to resign. A pact was signed on the 21st which named Francisco Leon de la Barra as ad-interim President and pronounced that new Presidential elections would be held. Diaz resigned and left for exile on 25th May 1911,[4] only a few months after the beginning of the insurrection.

For many the 'raison d'etre' of the revolution ended with the fall of the President, but others had taken up

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1. Cumberland (1952) p.125.
2. Womack (1972) p.113.
3. Cumberland (1952) p.136.
4. Cumberland (1952) p.150.

arms for different reasons and would not willingly disarm until they had been granted at least acknowledgment of the justness of their causes. It was the army of the South, a loose confederation led by Zapata, which had fought initially over the specific issue of agrarian injustices, which was to prove to be Madero's most intractable problem.

On the installation of the interim government most officials retained their posts. De la Barra himself had been in Diaz's last cabinet[1] and was, by nature, a conservative. The federal army too retained its power and the revolutionary armies who had beaten them in battle were expected to disarm.[2] This caused many of the revolutionary leaders to mistrust Madero and his sincerity to their cause.

Zapata met Madero on his triumphal arrival in Mexico City and because of his special plea Madero agreed to visit Morelos before Zapata discharged his troops. From then on Zapata, never a politician, was out manoeuvred by Carreon the interim governor. This ex-bank manager, intimate with the planters of the state, presented Madero with an image of anarchy and barbarism supposedly brought about as a result of Zapata's troops' activities.[3] This confirmed Madero's resolve to disarm this irregular army and in return Zapata was promised command of the state police force. This too, was denied him after the disarming of his

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1. Cumberland (1952) p.136.
2. Cockroft (1968) p.186.
3. Womack (1972) p.144.

troops when only a personal escort of fifty men was permitted.[1]

Morelos became the testing ground for the counter revolution with the planters, who controlled all the good agricultural land, resisting all attempts to reduce their holdings.[2] In consequence the villagers became ever more intransigent and continued their demands for justice.

Realizing the weakness of their position, the rebels set about re-arming themselves. The arms were supplied illicitly by Emiliano Vazquez, the Minister of the Interior, who also mistrusted the administration.[3] An attempted revolt against Madero in Puebla, in late July, gave Zapata the chance to openly re-arm his forces in defence of the revolution, although he was instructed by the Governor to stay where he was and hold Cuernavaca.

Whilst Madero again tried to persuade Zapata to disarm, De la Barra and the leader of the federal army in Morelos, Victoriano Huerta, planned to put Zapata down forcibly as a disciplinary measure.[4] All Madero's manoeuvring was to no avail, for although he reached an accord with Zapata and discharging of the rebel troops began, federal troops continued to advance on the rebel position. With Zapata and his escort surrounded, Huerta moved into Villa de Ayala, Zapata's home municipality, wiring De la Barra, "The facts show me the

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1. Womack (1972) p.148.
2. Cumberland (1952) p.175.
3. Womack (1972) p.152.
4. Womack (1972) p.166.

necessity to work resolutely and without consideration. These people are all bandits."[1] Zapata escaped to the mountains of Puebla where he re-grouped his forces.

In retrospect this may be seen as the turning point of the revolution. Zapata ousted by the same forces he had opposed, in supporting the over-throw of Diaz, now found himself being pursued by them in the name of the revolution. He and his fellow chiefs resolved that the only way to gain their political aspirations was to make their own plan. Their plan, the Plan de Ayala,[2] was the first to concentrate almost entirely on the resolution of agrarian problems. Even so it fell short of the 1917 constitution in that where it demanded the restitution of village lands, taken illegally, and expropriation of property of enemies of the revolution, it did not propose expropriation as a re-distributive measure. The battle cry of the plan was 'Liberty, Justice, and Law', and was proclaimed and followed by all Zapatistas, with few exceptions, until after Zapata's death, in 1919, when for the sake of expediency it was dropped.

Madero was by now the elected President of the republic and wished to institute his reforms. Economically the country had not been badly affected by the fighting which had not damaged to any great extent the productive capacities of industry or agriculture.[3] In agriculture Madero's ideas for reform were very modest, being little

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1. Womack (1972) p.169.
2. See Appendix A.
3. Cumberland (1952) p.206.

more than those proposed by Juarez some 50 years before. He believed that slow reform, introducing a vigorous group of small landowners to form a dynamic rural middle class, would eventually resolve the problem, and that vacant land should be found for these 'colonists'.[1] Even these modest ambitions were not realizable as unrest and rebellions dogged his term of office. Zapata continued in revolt in the South, Pascual Orozco[2] in Chihuahua, Felix Diaz in Veracruz, and many others, on a lesser scale, elsewhere. Worse than the military dangers and the expenses of such fighting was the image they gave the regime. The continuing reports that appeared in both the national and international press made Madero's position increasingly insecure.[3]

It was Huerta who, by a classic piece of treachery, overthrew Madero in a revolt which extensively damaged Mexico City and killed many non-combatants. Huerta, while ostensibly attacking rebel forces in the Ciudadela in defence of Madero, indiscriminately bombarded the city with artillery for ten days to provide a cover for his negotiations with the rebels. Aided by the good offices of the American Embassy,[4] the two sides finally reached agreement and Madero was removed from office and shot. Huerta assumed the Presidency and once again opposition to the government became united.

Refugees from Mexico City, disgusted by Huerta's butchery, fled South to the Zapatista forces and North

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1. Cumberland (1952) p.208.
2. Cumberland (1952) p.193.
3. Cumberland (1952) p.207.
4. Cumberland (1952) p.236.

to those of Villa. The refugees included Alvaro Obregon and Venustiano Carranza, who later led the Constitutionalist army. These groups began to act in temporary concert against Huerta who, supported by the federal army, was able to fight a long delaying action which, in the absence of any policy of reform, and without the hoped-for recognition from the United States, proved futile. After 18 months of fighting, with Zapata and his troops on the southern edge of Mexico City and the Constitutionalist forces to the North, Huerta surrendered to Alvaro Obregon.

Carranza was installed as provisional President and, to confirm this appointment, decided to hold a convention of the Constitutionalist revolutionary leaders. Many of them however, wanted to widen the junta to include Zapatistas and Villistas. A compromise agreement was reached such that the convention should include Villistas, but Zapatistas should be there only as observers. The convention when it met, obviously wishing to reject Carranza, voted to invite a full Zapatista delegation. This delegation, after conferring with Villa, joined the convention, which had now formally disowned Carranza. The Carrancista forces, realising their difficult position, withdrew from Mexico City and for a short while the military junta ruled. From November 1914 the Convention ruled firstly from Mexico City, and thereafter from Toluca until October 1915, when it was forced to retreat to Morelos.

For a whole year the convention ruled Morelos in

isolation. Land reform was implemented by the state government, the revolutionary leader Genovevo de la O having been elected provisional governor. Zapatista troops protected the mountainous borders of the state, rarely attacking the Carrancista forces surrounding it. Food crops, not sugar, were produced by the villagers, which meant that at a time when Mexico City was suffering from serious food shortages, Morelos had plenty; there was not even inflation.[1]

Perhaps the most bitter part of the counter-revolutionary war for Morelos now ensued. Carranza, determined to crush the Zapatista revolt, sent in forces under the command of Pablo Gonzalez. This invading army was more brutal than any of its predecessors had been. Gonzalez had political aspirations which depended upon the crushing of the 'revolt', and with 30,000 troops he set about forcibly pacifying the state.[2] Unlike the other states, which now benefitted from a modest programme of reforms set up by Carranza, Morelos was under military rule and all reforms which had been made by the Convention were abolished. Resistance continued and so a policy of concentration of the population into the towns was instituted with the intention of deporting them to other states.[3] Corruption was rife at all levels of the military organization, and virtually everything moveable was looted and sold in Mexico City markets.[4]

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1. Womack (1972) p.333.
2. Womack (1972) p.358.
3. McNeely (1966) p.168.
4. Womack (1972) p.360.

Such was the alienation created that Zapata gained strength whilst Gonzalez lost favour in Mexico City and got no reinforcements. Carranza decided that these could be more usefully used to fight Pancho Villa and Felix Diaz in the North. Slowly, but surely, Gonzalez made a strategic withdrawal and in the beginning of 1917 Zapata had once again acquired full control of his state.[1]

Whilst these events were unfolding Carranza had instituted a Constitutional Convention, with elected representatives from all over the country, to amend the 1857 Constitution in response to its apparent failure to protect the populace. On the 1st December 1916 he spent two hours announcing his proposed amendments of the Constitution. Like Madero he believed in a rather passive form of government and his proposals reflected this. They permitted rather than obliged. For example his proposed Article 27 concerning land would not render unconstitutional a wide ranging reform programme, but it certainly did nothing to imply that a government should support such a programme.[2] The whole tone of the document was out of sympathy with the feelings of the delegates; consequently, after an initial confrontation, the whole document was re-written. Article 27,[3] which had been a mere 400 words in Carranzas original, emerged from the Convention nearly 2,500 words long.[4]

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1. Womack (1972) p.374.
2. Cumberland (1968) p.263.
3. See Appendix B.
4. Cumberland (1968) p.266.

The Constitution was finally ratified by Carranza. Though not in sympathy with many parts of it, he realized the necessity of acknowledging it as a reflection of the will of the people through their elected representatives. Failure to sign it would have risked further major revolts. This amended Constitution contained many of the points raised in the Partido Liberal Mexicano manifesto of 1906. Although it was a long, and at times contradictory, document it set the basis and justification for Mexico's development from that time.

Carranza's dislike of some of the amended articles was manifested by lack of action rather than by the flouting of restrictions imposed by them. On land reform he was particularly reluctant to act and in his term of Presidency he had distributed less than one tenth of one percent of the land. Most of this land had been forcibly seized prior to 1917.[1]

Although a reluctant reformer, Carranza now headed a strong political alliance which supported the legitimacy of his position. With the guarantee of no re-election now written into the Constitution, the government prepared the way, at least by passing laws, for a more radical leader.

Among Carranza's critics was Alvaro Obregon who, although he had served in Carranza's cabinet as Secretary of War, became disillusioned with his conservative attitude and resigned. He became the leader of the

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1. Cumberland (1968) p.272.

Liberal Constitutionalists who came to represent the major force in the constitutionalist ranks in opposition to Carranza.[1] With this split in the ruling party Zapata saw his chance to again win friends in Mexico City, and started courting Obregon with his 'Toast to Alvaro Obregon' in honour of his criticisms of the administration. Although militarily the Zapatistas were again in retreat they continued their political advances towards Obregon. Even after the death of Zapata in April 1919, in a piece of treachery approved by Carranza,[2] the Zapatistas continued to deal with Obregon.

In June 1919, in opposition to Carranza's claim that he had the right to pick his successor,[3] Obregon declared his candidacy for the Presidential elections to be held in the following year. The Zapatistas declared openly for him in the following March,[4] and in April, with Obreganistas being harrassed and arrested throughout Mexico, Obregon fled South with the aid of De la O, one of the leading Zapatista chiefs.[5] Obregon, previous head of the armed forces, quickly gathered support, and Luis Cabrera, the Minister of Finance, observed "It's more than a rebellion ... a real military strike."[6] Obregon re-entered Mexico City on the 19th May and Carranza was sent into exile, but was killed when his train was ambushed in Puebla.[7] Congress elected Adolf de la Huerta provisional President for a term of six months[8] and militarily the revolution was over. No

1. Womack (1972) p.408.
2. Womack (1972) p.402.
3. Womack (1972) p.438.
4. Womack (1972) p.464
5. Womack (1972) p.489.
6. Womack (1972) p.491.
7. Womack (1972) p.494.
8. Womack (1972) p.494.

subsequent challege seriously threatened the political fabric of the nation and the work of reconstruction began.

POST REVOLUTIONARY PERIOD

With the swearing-in of Obregon to the Presidency in December 1920, the revolution, militarily, was at an end. There were subsequent minor revolts which caused some embarrassment to the government, but they had no widespread popular base and were suppressed without effectively threatening the political stability of the nation. The method of choosing the Presidential candidate was a problem which caused conflicts throughout the twenties and early thirties, but was resolved without the fighting of armies reminiscent of the Carranza-Obregon conflict.

Politically the revolution, now referred to as the 'Revolution', was still in its infancy. Its goals are still being pursued today with both the enthusiasm and direction varying from President to President.

Obregon, a very astute politician, realized the need to defuse the potentially conflicting interests of the power groups which had supported his ascendancy. His policies were a mixture of nationalism and revolutionary change carefully judged to cause the least internal antagonism consistent with re-organization and re-orientation of the nation.

The agrarian reform[1] was at last put under way using existing legislation and in the passing of supplementary enabling acts.[2] Land was granted to villages on a usufruct basis, each village grant being known as an

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1. See Appendix B.
2. Padgett (1966) p.27.

	YEARS	AREA GRANTED (Ha)	NUMBER OF EJIDITARIOS RECEIVING LAND	AVERAGE SIZE OF GRANT PER EJIDITARIO
Venustiano Carranza	1915-1920	381,949	77,203	4.9
Alvaro Obregon	1921-1924	1,730,684	154.128	12.3
Plutarco Elias Calles	1925-1928	3,173,343	292,194	8.6
Emilio Portes Gil	1929	851,282	126,537	6.7
Pascual Ortiz Rubio	1930-1932	1,495,182	117,500	12.7
Abelardo Rodriguez	1932-1934	2,056,268	158,262	13.0
Lazaro Cardenas	1935-1940	20,107,044	763,009	26.4
Manuel Avila Camacho	1941-1946	5,306,922	112,107	47.3
Miguel Aleman	1947-1952	4,210,478	91,054	46.2
Adolfo Ruiz Cortines	1953-1958	3,563,847	195,699	18.2
Adolfo Lopez Mateos	1959-1964	7,935,476	255,283	31.1
Gustavo Diaz Ordaz	1965-1970	24,491,000	396,700	65.9

Source: Navarrete (1971)

TABLE 1. LAND DISTRIBUTION BY PRESIDENTIAL TERM

Ejido after the pre-colonial tenure system. Obregon did, however, show great reluctance to initiate widespread reform based on a ceiling for personal land holding because of an unwillingness to further disrupt a near bankrupt economy and in fear of unleashing a backlash from the large and still powerful landowners.[1] The land distributed was mainly to the areas of disturbance in the centre and South, where the hold of the hacendados had already been broken by the Zapatista rebellion.[2] Although the quantity of land distributed was small compared to later Presidents,[3] the interest he showed was sufficient for the agrarian leaders to lend him their continued support, some of them being incorporated into the national and state governments.[4] To provide a mouthpiece for the various agrarian factions, he founded the Partido Nacional Agrarista, led mainly by Zapatistas.[5]

Similarly, in his support of labour groupings, Obregon encouraged the growth of the Confederacion Regional de Obreros Mexicanos (CROM). This union, being both nationalistic and anti-communist, was the only one officially permitted to strike.[6] Thus in securing better working conditions for organised labour the union was able to diminish the potential for left wing groups to threaten the hard-won political stability.

In his dealings with foreign powers the President

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1. Simpson (1937) p.87.
2. Padgett (1966) p.27.
3. See Table 1.
4. Womack (1972) p.499.
5. Padgett (1966) p.110.
6. Padgett (1966) p.27.

was careful not to directly antagonize, but consistently refused to disavow any of the articles in the 1917 Constitution limiting the rights of foreigners. This had a special significance with regard to the ownership of subsoil rights contained in Article 27, particularly with respect to the oil reserves at that time being exploited by British and American companies.[1]

The economy as a whole was in a very bad condition. After ten years of disruption, land distribution, if anything, worsened the economic situation as the campesinos, farming individual plots, switched from commercial to more secure subsistence crops. The mainstay of government finance was oil revenues, Mexico in 1921 being the world's third largest producer with an annual yield of 193 million barrels. The industry had survived the revolution unscathed, buying protection from any threatening group, and had even managed to expand its production from the four million barrels produced in 1910.[2]

When Obregon ended his term in 1924, he selected Plutario E. Calles, a friend and colleague, as his successor. This prompted a revolt by De la Huerta, the other contender, who, drawing support from Obregon's enemies of all political persuasions, provided a serious threat to Calles' peaceful accession to Presidency. The failure of the revolt to mature,[3] and the refusal of the United States to support it, ensured Calles' election and

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1. Padgett (1966) p.28.
2. Cumberland (1968) p.249.
3. Womack (1972) p.511.

resulted in De la Huerta's exile.[1]

Calles main interest during his presidency was in the 'modernization' of the nation. To this end he instituted road building schemes, schools, health programmes, and irrigation projects.[2] In short, he believed in active government participation in all areas of national interest. In the ejidal programme Calles continued the process started by Obregon, but increasingly excluded agrarian leaders from participation in government.[3]

It was with the labour leaders of CROM that Calles found most of his support. This union continued to be favoured by governmental policies and, with his encouragement, an alliance of interest was formed with the rising group of Mexican capitalists. The ruling group was soon involved closely with these entrepreneurs and, although professing socialist ideals, began to lead lives of conspicuous consumption.[4]

The Church, too, made its final and most violent bid for power. In 1926, in an attempt to pre-empt a government plan to implement some of the anti-clerical articles of the Constitution, Archbishop Jose Mora y del Rio published a statement that "The Episcopate, the Clergy and all Catholics disavow and combat Articles 3, 5, 27, and 130 of the present Constitution."[5] The government responded by expelling foreign priests, closing Catholic schools and encouraging states to

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1. Padgett (1966) p.29.
2. Padgett (1966) p.31.
3. Padgett (1966) p.30. See also Geneletti (1972) for discussion of the nature of the agrarian reform.
4. Padgett (1966) p.30.
5. Cumberland (1968) p.278.

limit the number of officiating priests. These were the opening clashes of what ended up as a bitter guerrilla war, centred on Jalisco and Michoacan. The Cristeros under the slogan 'Viva Cristo Rey', following the Mexican military tradition, committed many acts of barbary to which the army responded in a like manner.[1]

The rebellion continued, although never a threat to the political fabric of the nation, until 1928. Churches throughout the nation were closed, and the hierarchy exiled. The cessation of fighting, brought about by a more conciliatory attitude towards the rebels, did not resolve the problem, although the churches did re-open in 1929. It was not until the Presidency of Lazaro Cardenas and his clarification of the relationship between the Church and State that the conflict was fully resolved.[2]

Whilst the Cristero conflict was still being acted out the problem of the Presidential succession recurred. Calles supported Obregon in his desire to be re-elected and so pushed through two amendments to the Constitution; the extension of the Presidential term to six years, and the removal of the clause forbiding re-election, a central theme of the Revolution. It cannot be known what effect this would have had on later political developments as two weeks after being elected for his second term Obregon was assassinated.[3]

Calles, suspected of being involved in the plot,

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1. Cumberland (1968) p.279.
2. Cumberland (1968) pp.276-285.
3. Padgett (1966) p.32.

realized the need to withdraw himself from the Presidency and Emilio Portes Gil was named provisional President. Calles, to provide a basis for Presidential succession without political disruption, organised the Partido Nacional Revolutionario (PNR). This encompassed all the factions of the 'Revolution' and so contained the inevitable dispute within the controlling clique of the party.[1]

Using this party machine, Calles selected a relatively unknown man, Pascual Ortiz Rubio, as the PNR candidate to succeed Portes Gil. On his election in 1928, this political nonentity was forced to depend entirely on Calles. Politically to the right of the increasingly right wing Calles, Rubio so alienated Congress with his policies and ineptness that he was forced to resign before finishing his term.[2]

Calles, still retaining power, selected General Abelardo Rodriguez, a much more capable man, as the successor. Rodriguez, a friend and business associate of Calles, whilst promoting business and foreign investment, was inactive in agrarian reform, but permitted the improvement and rationalization of the legal framework of reform which paved the way for his successor.[3]

Lazaro Cardenas, a man who had held many governmental posts during Calles' period of supremacy, was selected as the PNR candidate for the 1934 election

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1. Padgett (1966) p.33.
2. Cumberland (1968) p.33.
3. Cumberland (1968) p.33.

as a sop to the increasingly militant left wing. From the first Cardenas changed the style of the Presidency. He electioneered widely throughout rural Mexico, and on election, spurned the luxury of Chapultapec Castle, the traditional residence of the President. On taking office he started a massive campaign of land distribution by encouraging villages to make claims for grants on the basis of need, as well as for land seized from them in the past. Labour Unions, after the previous six years of corrupt leadership, were once again encouraged to demand their rights by striking if necessary.[1] The conflict between the Church and the State was resolved by Cardenas' clarification of the Church-State relationship, and in a firm policy statement he said that "...there must be no anti-religious propaganda in the classroom. All our energy must be concentrated upon the great cause of social reform."[2]

Very quickly Cardenas had gathered an unassailable power base. In 1936 when Calles tried to reassert himself he was too late and was forced to retire from politics and leave the country.[3]

Cardenas continued his programmes of reform at the same hectic pace for the next four years. Land distribution reached a peak in 1937 with over five million hectares being distributed, over five times as much as the previous maximum in 1929.[4] In the field

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1. Padgett (1966) pp.34-35.
2. Cumberland (1968) p.284.
3. Scott (1964) p.129.
4. Tirado de Ruiz (1971) p.53.

of credit, Cardenas organised the National Ejido Bank to provide both credit and advice to ejiditarios.[1] This bank specifically aided ejiditarios to the exclusion of others, and its duties and powers as a technical advisor were essential to the commercialization of ejidal agriculture. Promotion of co-operatives and collectives was also initiated with, for example, the 'La Laguna' cotton growing region being virtually all expropriated with much of this subsequently being farmed collectively.[2]

Mexican nationalism was re-inforced by the expropriation of foreign-owned stocks in the National Railways based on a law passed in 1936 rendering any concern of public utility susceptible to expropriation.[3] The greatest confrontation was against the oil companies who consistently appeared to act in their own interest without regard to Mexico's. Disputes over taxes and wage rates had been continuing since 1920 and, finally, almost on a point of national honour, with the overwhelming support of all sections of society, Cardenas, in March 1938, expropriated the British and American oil properties.[4] This was probably the biggest single material factor in Mexico's subsequent economic development which, from this time, was based on low energy prices from the nationally-controlled wells. As with all other expropriations the owners of the property nationalised were reimbursed. In the case of

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1. Whetten (1948) p.191.
2. Eckstein (1966) p.131.
3. Padgett (1966) p.36.
4. Padgett (1966) p.37.

oil this was achieved over a number of years, the final payment being made to Britain in 1962.[1]

Political reforms were also instituted under the President's direction. A new labour confederation displaced the corrupt CROM. This was the Confederacion de Trabajadores de Mexico (CTM) which soon incorporated all significant labour groupings. The campesinos, too, were organised in the Conferacion Nacional Campesina (CNC). These two militant and powerful unions were incorporated into a new party to replace the PNR, the Partido Revolucionario Mexicano (PRM) together with two other 'sectors', the military and the 'popular'; basically the middle classes and those not eligible for the other sectors.[2] This incorporation of the major interest groups into the political framework of the country has been largely responsible for the stability of this basically 'one party' regime.

By the end of Cardenas' term in 1940 the Revolution's place in the nation's history had been established. All essential services were controlled by the government, not by foreign companies. Nearly 60% of children eligible were enrolled in primary schools compared to 25% in 1910.[3] Nearly half the arable land was farmed by ejiditarios. The nation was still very poor and the economy largely rural, but many social, political and economic pre-requisites for economic development had been fulfilled. The direction and style of these

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1. Cumberland (1968) p.315.
2. Padgett (1966) p.35.
3. Padgett (1966) p.219.

developments depended on the succeeding Presidents.

The succession of Avila Camacho was uneventful. A more moderate man than Cardenas, Camacho slowed down the rate of land reform and concentrated on rebuilding the economy after Cardenas' turbulent Presidency.[1] The Second World War provided a useful economic boost. Mexico allied with the United States and found a ready market for anything exportable, including labour.[2]

The growing middle class of bureaucrats, professional men and industrialists now formed themselves into the Confederacion Nacional de Organizacionnes Populares (CNOP) and through this organ achieved increasing influence in political circles.[3] Consistent with this pressure from the 'popular' sector, which wished to promote 'modernization' in both the agrarian and industrial sectors of the economy, was a rapid increase in investment in the programme to increase the area of land under irrigation. For Mexico, a predominantly arid country, this meant vastly improved yields and the possibility of farming without the uncertainty of crop failures due to drought. By 1945 about 10% of the federal budget was allocated to irrigation projects.[4] This also provided a boost for civil engineering enterprises which benefitted both from these projects and the extensive road building programme.[5]

By 1946 political orientation was firmly pointed towards economic growth. In response to this the

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1. Padgett (1966) p.41.
2. Whetten (1948) p.27.
3. Padgett (1966) p.41.
4. Whetten (1948) p.172
5. Cline (1962) p.64.

Partido Revolucionario Institucional (PRI), the successor of the PRM, essentially the same in all but name, chose Miguel Aleman Valdes as their candidate. Aleman was pro-business, able, and led a regime which was renown for its corruptness.[1] Under his guidance the programmes for major investment in roads and irrigation continued apace and industrial development expanded rapidly. The funding of these was based largely on foreign loans and investment.[2] Socially his policies created some discontent. To improve the rate of industrial development wages were held down and troops were even used to prevent strikes in the oil industry.[3] The ejidal programme received scant attention, especially the cooperative enterprises which were, ironically, the most commercially orientated sector in the land reform programme. Aleman saw the ejidal parcel as, ideally, a small production unit on which the ejiditario should depend for his entire income.[4] This was a subtle change from the previous image that the land worked should be used to supplement the income of the ejiditario and that it was necessary to widen the range of economic possibilities by the introduction of other economic activities into the countryside.

Legislation affecting the minimum size of land grants and also the size of land holdings ineligible for expropriation was passed. The increase in the minimum size of ejidal grants to ten hectares was

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1. Padgett (1966) p.41.
2. Cline (1962) p.159.
3. Cline (1962) p.159.
4. Eckstein (1966) p.41.

consistent with the philosophy of self-sufficient units of agricultural production, but the increase in land ineligible for expropriation, in certain circumstances up to 300 hectares, received wide criticism.[1]

In short the Aleman regime achieved significant strides in economic growth to the benefit, in the short term, of the wealthy and middle classes, at the expense of the lower class. Whether this was to the long-term benefit of the campesinos and their urban counterpart is a question that still has not been fully resolved.

Aleman finished his term in 1952 amid accusations of personal graft, and his successor Ruiz Cortines, with a reputation as an honest and good administrator, was elected.[2] His style was conciliatory and he tempered somewhat Aleman's hard-line policy of industrialization. There were no radical changes in policy in any field of activity, but, thanks to much new land coming under irrigation from schemes initiated in previous regimes, agricultural production boomed and so at last Mexico was self-sufficient in virtually all her agricultural raw materials.[3] Cortines himself, in his final address, made no claims to having instituted any new policies, merely that he had tried to set new standards of harmony, unity and hard work.

Lopez Mateos, a devotee of Cardenas, although politically more moderate, was elected in 1958. He continued to expand the economy by encouraging foreign

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1. Herzog (1974) p.491.
2. Padgett (1966) p.41.
3. Eckstein (1966) p.72.

investment and using the familiar Latin-American tool of deficit financing.[1] The land reform programme was given a new stimulus with over nine million hectares being distributed,[2] more than by any President except Cardenas. In some of his activities he was, however, hampered by the drift to communism of the Castro regime in Cuba, which led to some politically motivated industrial strikes.[3] In suppressing these Mateos lost the sympathy of some of the left-wing groups which otherwise would have lent him their full support.

Mateos' choice for successor was Gustavo Diaz Ordaz, his Minister of Government. In his term of office he too proved to be a supporter of land reform, distributing more than 18 million hectares.[4] Most of this land was in the drier states and was specifically intended for the raising of livestock and for forestry. This 'non-arable' innovation in land reform was instituted by Ordaz because of the difficulties, politically and economically, of extending the distribution of arable lands.[5] Economic policy continued basically unchanged with growth continuing.

The regime under Luis Echeveria continued the policies of his predecessors in all sectors of the economy. Economic growth was spectacular during the early seventies, but in the last three years of his office he had to contend with rising unemployment, inflation and a growing deficit in food production.

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1. Banco Nac. Mex. (1960) p.232.
2. See Table 1.
3. Padgett (1966) p.42.
4. See Table 1.
5. Osorio (1974) p.44.

His policies in the rural areas, while continuing land distribution at a modest rate, concentrated on raising the market returns for the campesino by price stabilisation and the penetration of Federally-controlled organs of purchasing and distribution such as the Compania Nacional de Subsistencias Populares (CONASUPO) and the export-orientated Coffee Exporting Association.

In the face of a continuing fall in the volume of production of the major food crops Mexico has been running an increasing deficit in the trade balance due partially to the importation of these basic commodities. This deficit has been financed to a great extent by foreign loans. These pressures have led to some innovations in governmental attitude. The most notable of these is that population control has become accepted as necessary for the future prosperity of Mexico, which has a population growth rate at present in excess of 3.5%, and a nationally sponsored campaign was instituted in 1974 to promote the control of fertility.

With the coming of the new President, Jose Lopez Portillo, the party appears to be committed to continuing the agrarian reform though more cautiously than Echeveria, and to promoting the formation of co-operative enterprises in the campo to increase the production and the returns to the small landowners and the ejiditarios. The resolution of the problem of how to integrate the growing number of unemployed and landless into the

economy has been recognised, but is as yet largely unresolved.[1] This problem must be tackled if Mexico is to maintain her political and economic stability.

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1. The News - Mexico City, 18th February 1974.

CHAPTER II

AN OUTLINE OF THE RURAL SITUATION

Since the population crash in the indigenous population caused by the arrival of the Spanish the population has been rising virtually exponentially in Mexico.[1] By 1950 it had finally reached the estimated pre-colonial figure of 25 million. Of these less than 12% were classified as being of indigenous stock. The bulk of the populace, both rural and urban, were, and are, mestizos. The population continued to increase at approximately 3.6 per cent per year until by 1975 it had reached an estimated 60 million inhabitants.[2]

Much of this increase in population has been absorbed by the cities, with Mexico City being a focal point for rural emigrants. Nevertheless, the rural population has continued to grow linearly in absolute numbers throughout the Revolutionary period in spite of the continuing rural-urban migration. From just under 11 million in 1920 it had risen to over 19 million by 1970.[3]

This rapid increase in population has had many repercussions on national policy. A continuing investment in infrastructure has been required merely to cope with this annual increase. For example in 1970 over 46% of the population was under the age of 15 years, and the provision of schooling has been considered by the

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1. See Fig. 1.
2. ILO (1978).
3. Censo Nacional (1970).

government not only a desirable objective, but a necessity for Mexico's development, and a right for the individual. The provision of primary schooling is widespread throughout the rural as well as the urban areas and investment continues apace. In 1960 the percentage of the population classified as illiterate was 34.6% of the adult population, with 25.9% of those between 15 and 19 years of age being illiterate. By 1970 the overall illiteracy had fallen to 25.8% of the adult population with the 15 to 19 age group now having only 15.0% illiterate. In 1960 there were nearly twice as many illiterate adults in rural as in urban areas with over two and half times as many in the 15 to 19 age group.[1] This reflects both the economic conditions in the rural areas (which militate against school attendance when there is work to be done in the fields) and the limited relevance of the schooling for the campesino.

The constant expansion in the absolute numbers of young people and growing failure of the country to fully employ its adult population has been a cause for increasing concern.[2] For this reason in 1974 President Echeverria initiated a campaign to reduce the birth rate, which has remained at over 40 live births per thousand inhabitants per year since the early 1930's - whilst over the same period the mortality had fallen from 26 to less than ten deaths per thousand inhabitants per year.[3]

The birth-control programme, a significant innovation in a predominantly Catholic oountry, was based on the

1. UNESCO (1975) pp.166-167.
2. See Freebairn (1969)
3. Censos Nacionales 1930-1970.

concept of responsible parenthood and was intended as a voluntary scheme in which the state would supply the means of fertility control. The scheme was introduced with much publicity but with little immediate effect, though promoters visited many sectors of society. The scheme was bound to be ineffectual in that only the means were provided to limit the birth rate. Not included was any attempt to change the perceived need to have large families. Children play a vital part in Mexican life and perhaps the majority of people aspire to have a large family. Certainly at a village level parents of a large family have an improved economic prospect and enhanced security because of their offsprings' future earning power and because the cost of raising a child in a semi-subsistence community is not great. The provisions of the means, then, was a vital but not the sole requirement for reducing the population growth rate.

A factor which has a correlation with fertility in Mexico is life expectancy. The longer the expectation of life at birth the lower the fertility. Other factors can be identified which may effect fertility; these include economic growth and the percentage of the labour force in agriculture, but the evidence of any direct linkage with fertility is weaker.[1] Nevertheless the Mexican Government has taken an essential first step in attempting to control the population growth and is actively pursuing many policies which may contribute to a reduction in the desired family size, which is essential for a non-catastrophic reduction

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1. See Hicks (1974).

in fertility.

The reason for the population 'explosion' after the Revolution has not been due to any change in the pattern of family life: it has been almost entirely due to the reduction in both pre-natal and post-natal mortality. The increasing economic welfare and the provision of education and medical facilities, albeit limited, for all sections of the population has both improved the knowledge of how disease occurs and the chances of recovery once a disease has been contracted. The campaign to eradicate malaria by periodic spraying of mosquito breeding areas has also been largely successful in eliminating the diseases. Still a serious shortcoming has been the failure of the Seguridad Social, the social security system, to reach much of the rural population. Though it has been recognised by successive Presidents that the populace should have access to medical facilities and be insured against incapacitation through ill health or accidents economic constraints have limited the rate at which the facilities can expand.[1]

It has been argued by critics that the facilities are ill organised and over costly.[2] Certainly there is much scope for the provision of trained medical auxiliaries in the rural areas, similar to the Chinese 'barefoot doctors', to provide regular attention at the village level.

The improvements in living standards have depended

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1. See Leal de Araujo (1973).
2. Cañedo (1974).

	TOTAL GROSS DOMESTIC PRODUCT (Current pesos)	AGRICULTURAL GROSS DOMESTIC PRODUCT (Current Pesos)	COLUMN 1 / TOTAL POPULATION (Current Pesos per Head)	COLUMN 2 / RURAL POPULATION (Current Pesos per Head)	COLUMN 4 / COLUMN 3 (per cent)
1950	$44,016 \times 10^6$	$8,874 \times 10^6$	1,706	599	35
1955	88,269	16,174	2,847	1,017	36
1960	150,511	23,970	4,310	1,392	32
1965	252,028	36,386	6,162	1,978	32
1970	418,700	47,435	8,682	2,324	27
1973	617,870	64,197	11,489	2,951	26

Sources: Navarette (1971); World Bank (1976) and the U.N. Demographic Yearbooks.

TABLE 2. ECONOMIC INDICATORS AND POPULATION

on the continued economic growth of the country which has in the past outstripped the population growth, in 1970 averaging up to about 6% growth in the Gross Domestic Product (GDP) in real terms each year. This growth has not been equally spread between sectors. Much effort and investment has been expended in promoting industrial growth and it is here that the bulk of the growth has occurred, with the GDP rising from 85.4×10^9 pesos in 1950 to 296×10^9 pesos in 1970 (at 1960 prices).[1] Meanwhile the share of agriculture in this has fallen from over 17.7% in 1950 to 10.3% in 1973; the agricultural sector does have a greater significance in exports and is still earning over 20% of the foreign revenue.[2]

Though the Government has been publicly committed to land reform and rural development, agricultural development has received a diminishing proportion of the federal budget with the bulk of government investment in this sector being on major irrigation works. Agricultural production has risen dramatically since the Second World War as a result of a number of factors including an increased acreage under irrigation, the development of high yielding varieties and the increased use of artificial fertilisers. The 'green revolution' came to Mexico first with the development of maíz hybrids but much of the potential for increases in yields on the prime lands has now been exhausted.

Although agricultural production has increased

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1. See Table 2.
2. Banco de Mexico (1974).

LANDHOLDINGS %	AREA AS A FRACTION OF TOTAL %		
	1940	1950	1960
10	0.49	0.45	0.43
20	1.97	1.82	1.73
30	4.43	4.08	3.90
40	7.88	7.26	6.93
50	13.82	11.34	10.84
60	21.37	16.34	15.87
70	30.29	25.17	23.99
80	40.58	35.74	33.36
90	52.24	48.58	46.56
100	100	100	100
Number of seperate holdings	2.4×10^6	2.6×10^6	2.7×10^6
Total Area (Ha)	14.9×10^6	19.3×10^6	23.8×10^6

Source: Navarrete (1971)

TABLE 3. CUMULATIVE ARABLE LAND HOLDINGS

significantly in the last twenty-five years the distribution of these gains has been very unequal. Most investment of both government and private funds have gone into the areas of high potential return. This has meant that the majority of the rural population has not had the benefit of the credit and technical advice available to others. Larger landowners have been in a position to obtain credit, using their land as security and, when needed, to exploit the full potential of improvements in seeds, fertilizers and machines. The owners of the minifundias and most ejiditarios who farm the bulk of the arable land have been unable to obtain any such easy access.[1] These poorer campesinos who have been unable to benefit from the general increase in yields have not shared in the increasing prosperity of the other sectors of the economy as the real price levels of the major crops remained virtually constant throughout the decade from 1960-1970, with many crops suffering a decline in their real price.[2] After 1971 maíz production, which had reached a peak of 9,785 thousand tonnes in that year, declined to 7,783 thousand tonnes in 1974.[3] In an attempt to increase production the government initiated a price support scheme in 1972 which halted the drop in real price of maíz but production continued to decline so severely that by 1974 Mexico was a net importer of agricultural goods.[4] This put a severe strain on the

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1. See Financial Times 23rd May 1973 and Table 3.
2. Silos (1975) Cuadro XXV.
3. Silos (1975) Cuadro XVII.
4. F.A.O. (1975) p.173.

economy as a whole and contributed to the inflationary pressures on the peso. In 1973 inflation was running at 32.6% per annum.[1]

The area planted with maíz has been declining since 1966 when over eight million hectares were planted. By 1974 this figure had dropped to six million hectares. Over the same period the land under the plough has also dropped by over one million hectares.[2] No simple explanation may be given for this anomalous situation though clearly the capital shortage in agriculture is a significant factor.[3]

The effect of a preferential access to inputs can be seen in the increased yields for irrigated areas. These increased by an average of 5.9% per annum between 1960 and 1974 whilst on non-irrigated lands the rate of increase was only 3.3%. By 1974 the irrigated land accounted for 21% of the total cultivated area, 31% of the agricultural production and 41% of the value of the production.[4] This sector, which absorbed the bulk of the Federal capital investment in agriculture, also receives over 50% of the available credit.[5]

With crop yields of around eight tons per hectare per year in the irrigated areas the scope for further increases in yields is limited and so much attention must now be focused on the non-irrigated smallholding which has the most scope for an improvement in yields.[6]

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1. I.L.O. (1978)
2. Silos (1975) Cuadros XVII and XVIII.
3. Winkleman (1971) p.290-291.
4. Silos (1975) Cuadros XVII - XX.
5. See Excelsior 16th March 1974 p.1A.
6. F.A.O. (1975) p.174.

The volume of cereal imports between July 1973 and June 1974 amounted to over 20% of the 1974 national cereal production.[1] In the attempt to increase production of cereals (especially maíz, which is planted on nearly half the arable land) not only is the price being controlled but the Compania Nacional de Subsistencias Populares, a government agency, is setting up purchasing and storage points throughout the rural areas. The intention is to raise the price actually received by farmers for their grain as in the past middlemen have taken a large share of the value of the crop. In 1974, though maíz was planted on 48% of the land, this accounted for only 15% of the total value of agricultural production.

This gives some indication as to why maíz prices need to be raised for the farmer. Also it indicates why, on the labour-intensive smallholdings which are entering into the cash economy, little more than the subsistence requirement is grown. Cacahuates, peanuts, for example, yielded an average in Mexico in 1974 over 4,700 pesos per hectare in the market place whilst maíz yielded only 1,930 pesos per hectare. Though the labour input is slightly greater for cacahuates on non-mechanised farms the financial yield warrants the exercise even though, perhaps, some land may be left idle.

The penetration into the rural areas of a guaranteed price for maíz, and the provision of high yielding seeds, may well serve to increase production. Though without

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1. Secretaria De Industria y Commercio (1974).
2. Banco de Mexico (1974) and Silos (1975) Cuadros XVII and XXVII.

the provision of credit for fertilizers and insurance against crop failure in the case of drought many farmers will be reluctant to give up their robust traditional maíz crops which assure them a subsistence. Certainly the further the smallholder is drawn into commercial farming the more he will insist on a good financial return on his effort.

Such considerations raise questions about the viability of the dualistic Mexican rural scene with large, wealthy private landholdings existing alongside private smallholdings and ejidos. There is an uncertainty as to the long-term objectives of the land reform programme. It has not in the past been seen to serve the urban interests in terms of agricultural production as well as the private sector. This could be argued to be as a result of the lack of access to capital for all but the most productive ejidal lands and smallholdings. At present it appears unlikely that the ejidal system will be extended to all the lands eligible for expropriation. Some argue that as an expedient to contain the post-revolutionary potential for violence in the rural areas it has served its purpose and may now be abandoned; others, who feel that such a course would inevitably flood the already saturated urban labour market, argue that the ejidal system is serving the national interest.

What is clear is that the smallholdings, both private and ejidal, in Mexico have increased their production using capital very economically and so in many ways have sponsored the industrialization of the country.[1] Even

1. See Dovring (1970).

though land reform is continuing and further expropriation and ejidal grants are being made it appears that land concentration is still occurring.[1]

The land reform programme up to 1970 had distributed over 75 million hectares of which nearly 14 million were classified as arable, about half the arable area of Mexico. After the Presidency of Cardenas the pace of the land reform slowed, but since the low point of the Presidency of Miguel Alemán the number of recipients per annum has increased. During the regime of Guetavo Diaz Ordaz, from 1964 to 1969, 323 thousand campesinos received an average of 56 hectares each, of which six hectares were arable.[2] The size of each donation in the future will increase as the current political philosophy is that grants should be of sufficient size for the ejiditario to earn a reasonable living standard off the land without needing to supplement it. For example in the recently opened up lands in Sinaloa, with irrigation provided by large scale dams, the new ejidos provide each ejiditario with ten hectares of prime quality land.[3] This is sufficient to permit them to form production co-operatives and collectives to make use of large-scale labour saving machinery. They also have ready access to capital from the 'official' banks to pay for these and other inputs.

Older ejidos, especially in the centre of the country, have much more intractable problems. Their grants, which

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1. Tirado de Ruiz (1971) p.58.
2. See Table I.
3. Desarollo Agropecuario Ejidal de Sinaloa (1971) p.15.

were often made over thirty years ago, were barely sufficient for their needs at that time. With the rural population being more than double the 1930 level, landlessness is once again causing poverty in these areas.[1] In the poorer, non-commercial, ejidos the sons of ejiditarios often divide their father's land grant on his death, even though legally only one may have title to it.[2] This further reduces the productive potential of the land, as illegal tenure prohibits the provision of credit from the 'official', Government run, banks. On more commercially oriented ejidos the tendency is for the ejiditarios and their heirs to hold the land for their own benefit, to the exclusion of their relatives without land.[3]

The ejidal programme has undoubtedly had the effect of containing the social and political aspirations of the campesinos aroused during the Revolution, even though, contrary to the official history, their participation in, and control of, the programme have been minimal. All the rural based military revolts had been crushed before the reform was instituted,[4] although land in certain parts of the country, seized in the Revolution, was held uninterrupted with land reform formalising the existing situation.[5]

The lack of an effective campesino voice in policy-

1. Restrepo (1972) pp.83-86.
2. Restrepo (1972) p.105.
3. This development of rural elite has been noted by various authors. See Lewis (1951) and Fromm (1970).
4. See Geneletti (1972).
5. In Morelos over half the haciendas were held by ex-Zapatistas and were formally distributed to the campesinos in the early 1920's. See Huizer (1973) p.33.

making decisions is revealed in the centralism of governmental institutions, including the Confederacion Nacional de Campesinos, which is a corporate member of the Partido Revolucionario Institucional.[1] This centralization has resulted in poor co-ordination of development plans and, often, a failure to realize possible developments.[2] Corruption, too, plays its part in reducing the benefit of governmental policies to the campesinos. Cardenas originally centralized the 'official' banks in an attempt to reduce the level of corruption, but it continues to flourish.[3] In an attempt to reduce this and increase the effectiveness of the 'official' credit facilities the Ejidal Bank and the Banco Agropecuario have been combined into one organisation and the funds available have been increased.[4] Much emphasis is now being placed on the promotion of yield-enhancing techniques for the low-yielding non-irrigated smallholdings, as well as, the provision of increased credit.

Formal schooling has not in the past been an important factor in changing agricultural production patterns, as the schools' curicula are not particularly biased towards the problems of the campesino. The teachers, too, are not normally villagers, being recruited more from the better-educated townspeople. The result is that few live in the villages where they

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1. See Padgett (1966).
2. Osorio (1974) p.981.
3. Excelsior 11th May 1974 p.6.
4. Excelsior 22nd July 1974 p.36.

teach and spend little time in the village outside school hours.[1] Many technical changes in smallholding agriculture have been the result of external factors such as the provision of credit by middlemen for moneymaking ventures. One such example around Puente de Ixtla in Morelos was the provision of risk capital by a middleman for farmers to grow melons for export. He took the financial risk, but also took the bulk of the profit.[2] It is quite normal for the campesinos farming smallholdings to have available to them only the middleman's credit, typically paid to cover the expenses of the harvest which must be sold to him alone, which provides little incentive or opportunity to increase yields.

The irrigated sector of agriculture has shown a remarkable potential for raising its production. Much of the 'new land' irrigated since 1940 has not gone to form ejidos but has been sold to 'colonists'.[3] These 'colonists' plots have been relatively large, normally in excess of ten hectares, and so capital has been readily accessible both because of the economic potential of the land, but also because it may form collateral for the loan : private banks have been prepared to consider such investment alongside their more usual industrial and commercial ventures. The ejidos, being held in usufruct rather than owned, have been largely ignored by private banks as the risk for the loan could not be

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1. Personal communication with a teacher born in Ahuehuetzingo but teaching in Guerrero.
2. This was reported to me by Santos, a villager in Ahuehuetzingo when the entrepreneur was kidnapped and ransomed by Lucia Cabañas, a guerilla operating from Guerrero.
3. Alba (1971) pp.102-110.

offset against the value of the land.

For the future the irrigated land still has potential for increased yield and more land will be irrigated where this warrants the capital expenditure. It is, however, the 11% of the arable land farmed by 50% of the rural population that presents the most intractable problem.[1] The individual holdings are too small to provide a high standard of living. For this reason they are easily discounted by planners as having too limited an economic potential to warrant a significant expenditure, though it must be acknowledged that their plight is severe and chronic.[2]

Many of these minifundios have, however, shown a capability not only of survival but also of increasing their yields without sophisticated mechnanisation or artificial fertilizers.[3] There is much that can be done yet to further increase the return for their labour and it is essential that this should occur both for economic and human reasons. The way such developments can be fostered is perhaps unclear, but the techniques best suited to the form of agriculture will be markedly different to those of larger-scale more capital-intensive farms. Perhaps the way to proceed is to observe the way they earn their living at present and respond to their needs rather than to impose perceived solutions.

The following chapter describes one particular example of a poor village. Its resources are greater

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1. See Table 3.
2. See Mejido (1974).
3. Leyva (1971) pp.70-74.

than villages in many other areas such as in Tlaxcala, but its potential is far greater than has been realized in its production to date. Once we understand something of why this is in this particular location then we can perhaps understand something of the problems facing the Mexican Government in attempting to boost agricultural production in the thousands of such communities in Mexico.

CHAPTER III

VILLAGE LEVEL STUDY

INTRODUCTION

This study is based primarily on observations made by the writer in a village in the south of the State of Morelos in Mexico. The choice of this community as the centre of the study was not made because of prior knowledge of any particular feature of its history, organisation or situation; it was dictated more by the lack of outstanding features which would render the village unusual.

The village lands, in the foothills of the mountains of Guerrero, are crossed by seasonal rivers and are neither exceptionally fertile nor suitable for widespread irrigation. There are no natural resources or craft traditions which give rise to significant earnings outwith agriculture. The village, then, had no particular merit to distinguish it from many others in central Mexico; although unique it is in many ways typical.

Certain factors, essential for entry into a wider economy, are present. Road connections to both local and national markets are good, with the village being only two kilometres off the main road from Mexico City to the coastal town of Acapulco. Commercial farming is practised extensively in the locality, principally on irrigated land, and so the villagers are aware of the methods of cultivation and marketing used in these

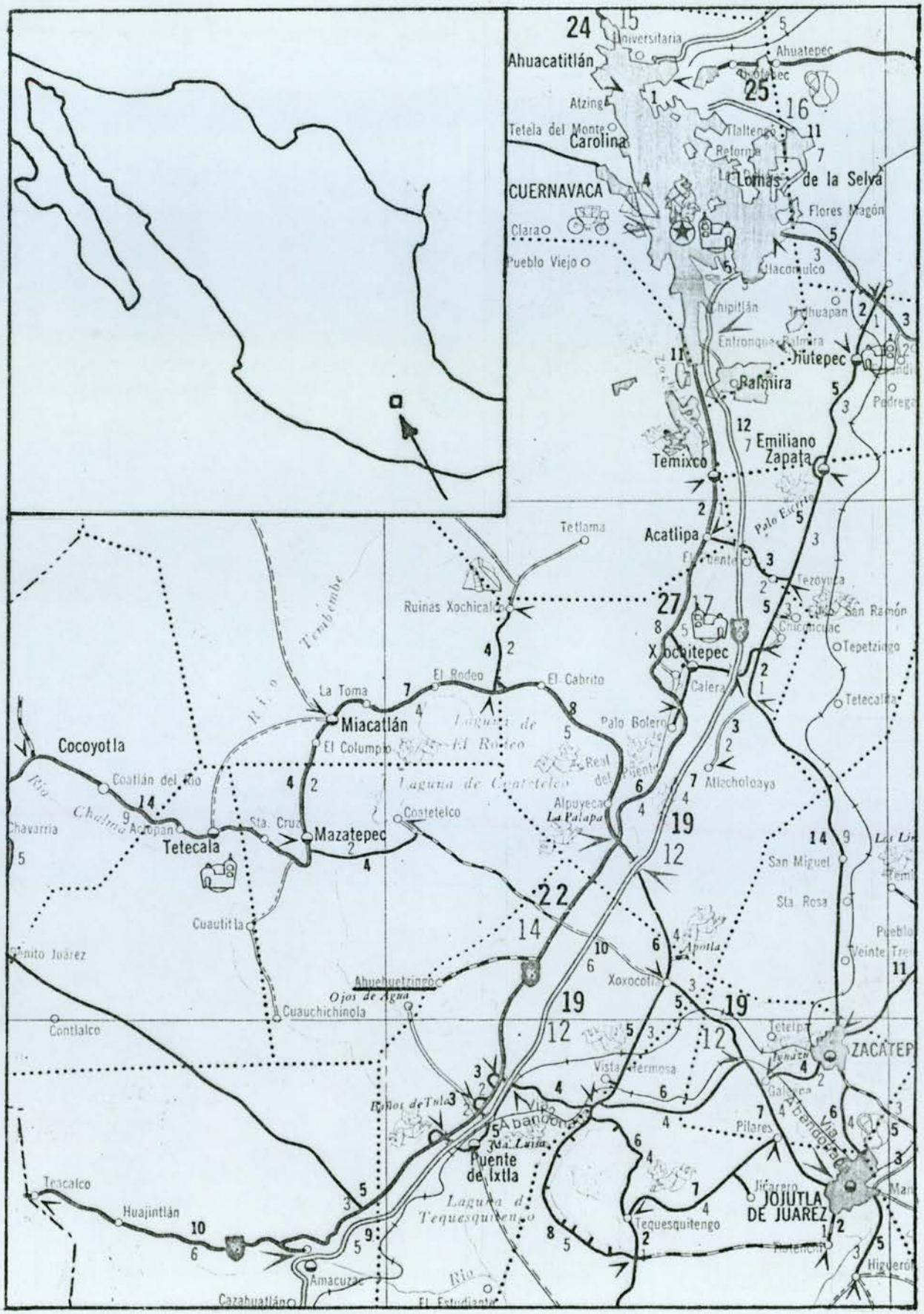
enterprises. Other influences such as education, radio, and more recently, television, ensure that continuing social change, at an accelerating pace, is inevitable.

The principal aim of the writer in undertaking this study was to understand the place of technology and technological change in the social and economic fabric of the community. For this reason emphasis has been placed on the dynamics of the village situation where it may affect and be affected by these aspects, rather than to map out in detail kinship ties, religious customs and other factors which are central to anthropological studies of village communities.

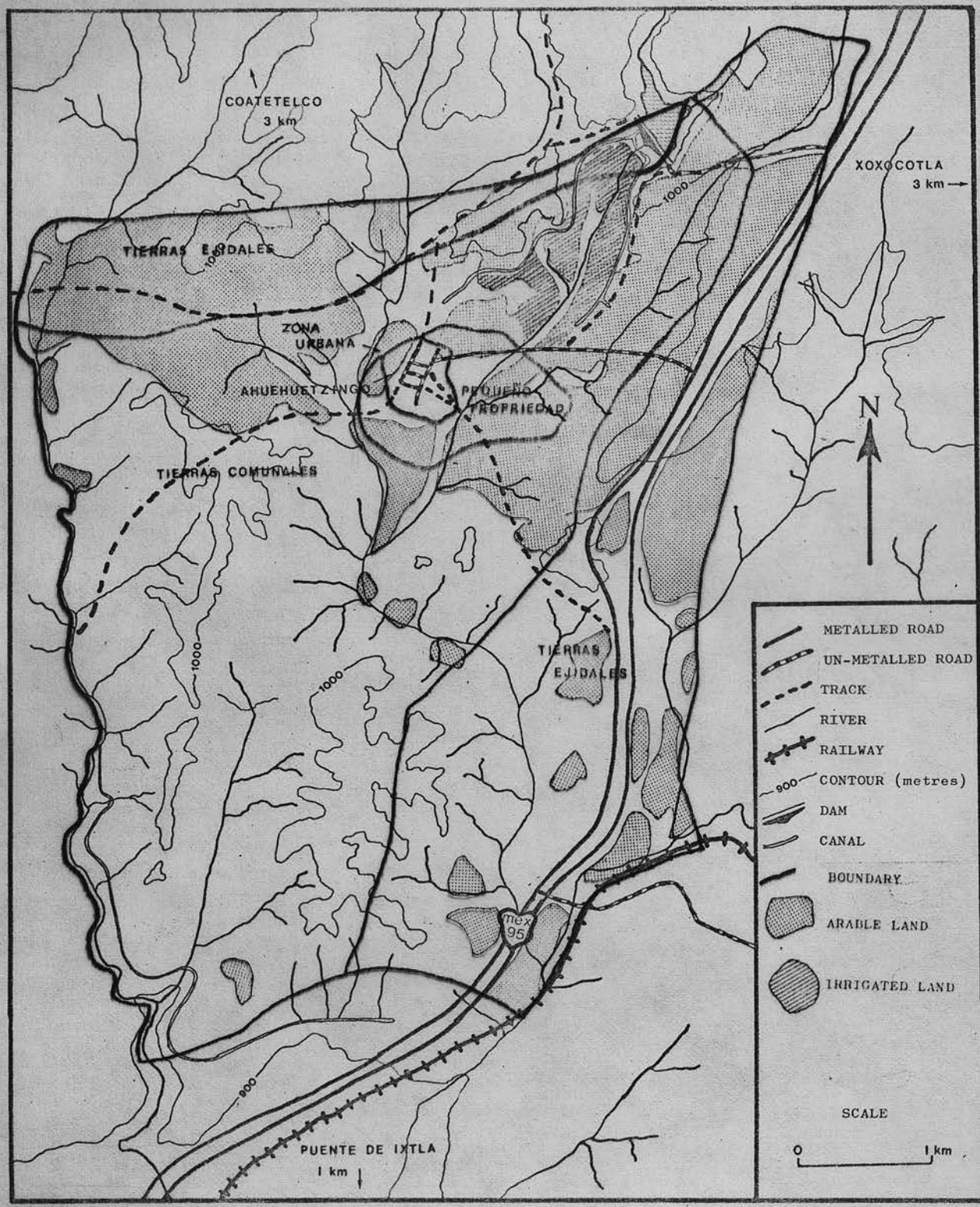
Plate 1. View South from Xochicalco

Plate 2. Ahuehuetzingo from the North (May)

Plate 3. Ahuehuetzingo from the North (September)



Map 1 : Village Location



Map 3 : Village Boundaries and Land Use

Map 2 : Ahuehuetzingo

VILLAGE LOCATION[1]

Ahuehuetzingo is situated in south-west Morelos 60 kilometres south of Mexico City, 27 kilometres south of the state capital Cuernavaca. The municipal seat, Puente de Ixtla, is seven kilometres to the South, just off the main Mexico City - Acapulco road which passes two kilometres to the East of the village. An earth road, which remains passable throughout the year, connects the village with the main road.

Just below the village, to the East, a freshwater spring erupts into a stream, providing a constant supply of potable water. The oldest part of the village, which includes the church, the bullring and the only white-walled adobe houses, is on a fairly flat ridge between the freshwater stream and a seasonal stream to the West. As the village grew it extended outwards along the ridge and down towards the spring. The less preferred house sites, where the poorer families settled, are those nearer the stream. They are affected by the steeper slope and, possibly, by the presence of mosquitos and other insects. However the region, formerly susceptible to malaria, has been almost entirely cleared of the disease by the widespread use of insecticide in a government eradication programme.

The village lands lie above the rich, irrigated basin to the East, with the mountains of Guerrero to the West; the rivers traversing them are seasonal and flow predominantly towards the South, through hilly

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1. See Maps 1 and 2, and Plates 1 2, and 3.

terrain. The valleys through the hills are steep-sided and largely infertile.

The most intensively farmed lands are in the alluvial soil of three major river valleys. Two adjoining valleys to the East and North-East of the village contain about 200 hectares of arable land, of which 35 hectares are irrigated. The third river valley lies to the West and has about 150 hectares of arable land.[1] A further 300 hectares, farmed less intensively, are to be found on the valley sides and in small pockets in the rocky terrain to the South.

The remainder of the land controlled by the village, amounting to about 1,500 hectares, is mostly rocky with thin soils able to support rough grazing pastures. The bulk of this land is in the hills to the south of the village.

The soil is light and fairly coarsely grained. It is readily pervious to water, although in heavy rainstorms flash flooding occurs and some erosion results. To the West of the village are a number of steep-sided stormgullies, some five metres deep, which continually extend into the arable land in the flat valley floor. All the arable lands suffer some crop damage in very heavy rains, but in flatter lands the losses can be made good by transplanting, as the water brings with it as much silt as it sweeps away.

There are no woods or stands of trees of any size but bushes and small trees grow wherever cultivation

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1. See Map 3.

is not carried out. These abound on river banks and gulleys near the village and provide readily-accessible fuel for the cooking fires.

No valuable minerals or clays are present in commercially exploitable quantities although certain of the natural resources are exploited for local consumption. Adobe bricks are made at two sites from the fine silt laid down by the meandering stream to the East of the village. Thatching materials are supplied by a variety of spiked-leafed bush growing in the scrub land. Trees, as well as supplying fuel, are adequate to meet local needs for building materials for walls, roof trusses and fencing.

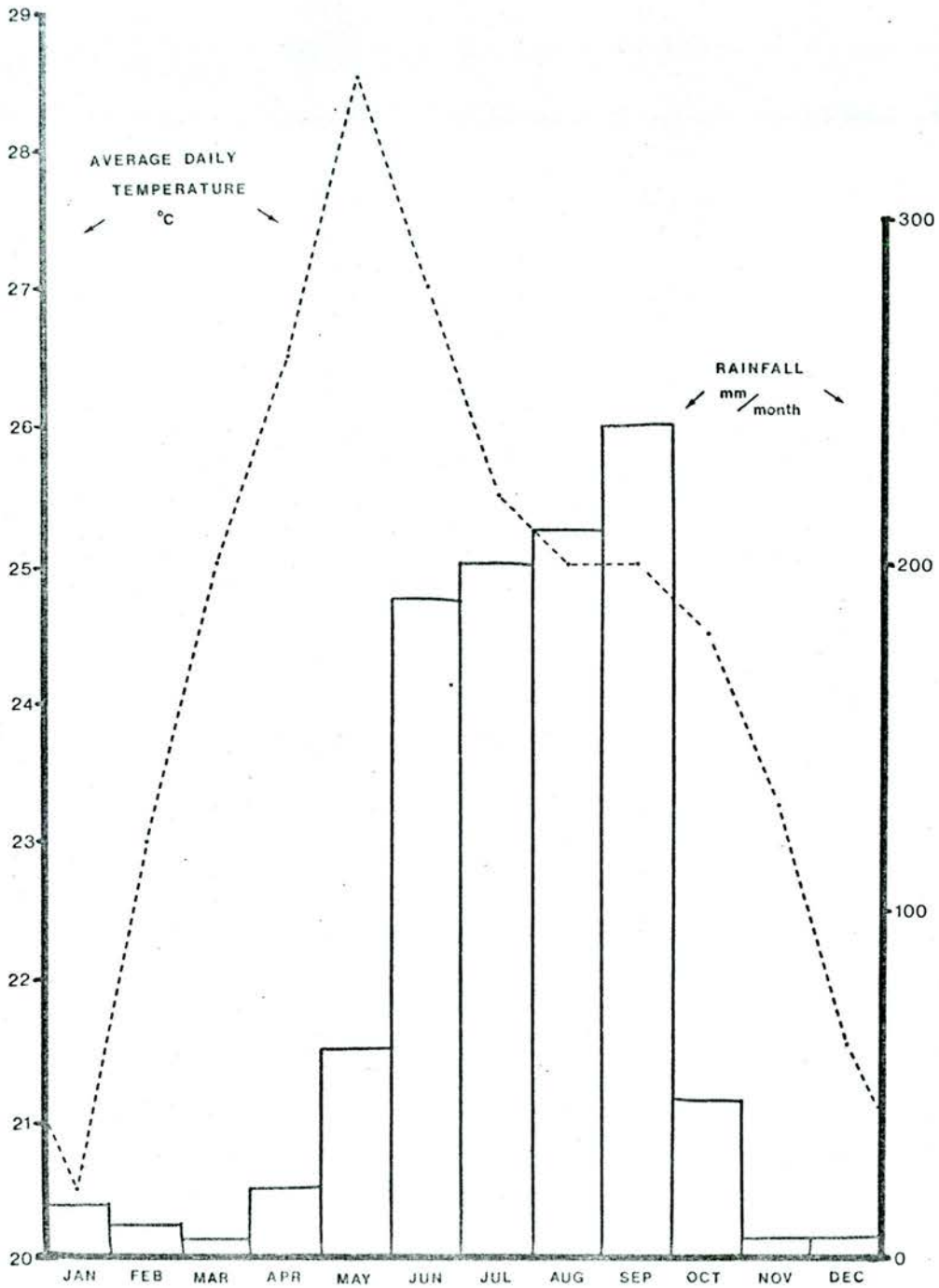

Fig. 2. Climate

CLIMATE

The climate in Morelos is determined largely by altitude. The mean annual temperature varies from less than 10°C in parts of the North of the state to over 24°C in the South. Puente de Ixtla, at an altitude of 900 metres above sea level, has a mean temperature of 24.5°C. Ahuehuetzingo, six kilometres to the North and 50 metres higher, has a mean temperature in excess of 24°C.[1] The month by month averages of both temperature and rainfall for Puente de Ixtla are shown in Figure 2.

The temperature varies between a mean of about 20°C in January to one of 29°C in May. Because of the onset of the rainy season in early June, midsummer is not the hottest time of the year. Even though, after May, the mean temperature drops dramatically, crop growth is not inhibited in any way as cloud cover is by no means continuous. The days are frequently bright and sunny as the rains fall mostly at night – often during violent thunderstorms. The bulk of the rain (over 80%) falls between the beginning of June and the end of September. The four winter months from November to February are extremely dry, with a rainfall of less than 5% of the annual total. Consequently, in the absence of irrigation, cultivation cannot commence until, at the earliest, the middle of May, with the main crop of maiz being ready for harvesting in November or early

1. Climatic information taken from Carta de Climas - Mexico 14Q-V published by Comisión de Estudios del Territorio Nacionál y Planeación - 1970.

December.

The long-term average annual rainfall amounts to some 950 millimetres but periods of drought occur regularly. According to Santos, one of the villagers, agricultural production is reduced significantly by rain failure in about one year in three. In 1974, the year this study was made, the rains were particularly light and irregular. The most critical period was a three-week drought which started in the beginning of August and seriously threatened the crops. Although it broke before irreparable damage was caused the rains remained light thereafter.[1]

The nature of the precipitation, arising mostly from violent thunderstorms, leads to the problems associated with flash flooding. When violent storms break, often resulting in a few centimetres of rain falling in a matter of hours, much of the water flows off along the surface. In the short term it may sweep away seedlings in the freshly planted fields. In the longer term a significant loss of topsoil is reducing the fertility of steeply sloped fields, and the formation of flash flood gullies is eroding the land in the rich deep-soiled valley beds.

In human terms the climate is comfortable to live in except when working in the direct sun, the solar radiation intensity being very high, especially at midday. Hats are invariably worn by the men, with the

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1. 1974 was a dry year throughout central Mexico with yields being adversely affected as a result. Silos (1975) pp.30-31.

women using the ubiquitous reboso, shawl, for shade. Humidity is low throughout the drier months and with the onset of rainfall the associated temperature drop compensates for the humidity rise. At no time of the year are heavy clothes required; throughout the year children playing near their homes wear little clothing.

HISTORY

The origins of the village are not known, but it appears that the community developed from a prehispanic or early colonial rancho. The name Ahuehuetzingo is Nahuatl[1] and means the Ahuehuet pool. Ahuehuet is a species of tree, so the name probably refers to the pool fed by a freshwater spring a little to the East of the present village site, and to the trees around it. Water is, of course, of paramount importance in selecting a suitable site for settlement when nine months of the year are almost rainless.

The original population could not have been large, as the surrounding land is of poor quality in comparison to that farmed by other villages in the district. This view is supported by the failure of the villagers to make a claim for restitution of seized communal land when petitioning the government for ejidal lands following the 1910 revolution.[2] This implies that the tierra de commún repartamiento granted by the colonial regime remained intact. Its size and quality was such that only a small farming community could survive on its produce alone.

The increase in population came later with the expansion of the hacienda system. This provided the possibility of employment for the villagers for, although the village was not directly threatened by them because of the poor quality of its lands, it

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1. The language of the Aztec Civilization.
2. Departmento de Asuntos Agrarios y Colonización - Archives - Ref. Ahuehuetzingo Mexico D.F.

shared boundaries with three haciendas. As the area of land under irrigation increased in the late nineteenth century, the opportunity for at least seasonal employment in the sugar cane fields improved. By 1910 the population of the village was 551 according to the national census of that year.[1]

An influx of immigrants from different parts of central Mexico, seeking refuge from the expansion of the haciendas and their seizure of village lands, had removed, by the end of the nineteenth century, any trace of Nahuatl culture from the village. However, in common with other villages, the use of Nahuatl names for remedial herbs and certain animals and plants persists.

The communal land, which had originally been held in common, was divided into parcelas in the nineteenth century, in accordance with the Liberal philosophy and dictate.[2] By the time of the 1910 revolution such land was bought and sold in the same way as private lands. The revolution, when it came, received little active support from the village, as the threat of land seizure that so many of the villages had been living under in other parts of Morelos did not exist for this community. Most migrated up into the mountains of Guerrero for the duration. Many never returned and some, undoubtedly, died of starvation and disease;[3] others may have gone to other villages in the hope of

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1. Censo Nacionál de 1910
2. See Chapter I for further details.
3. Womack (1969) p.240.

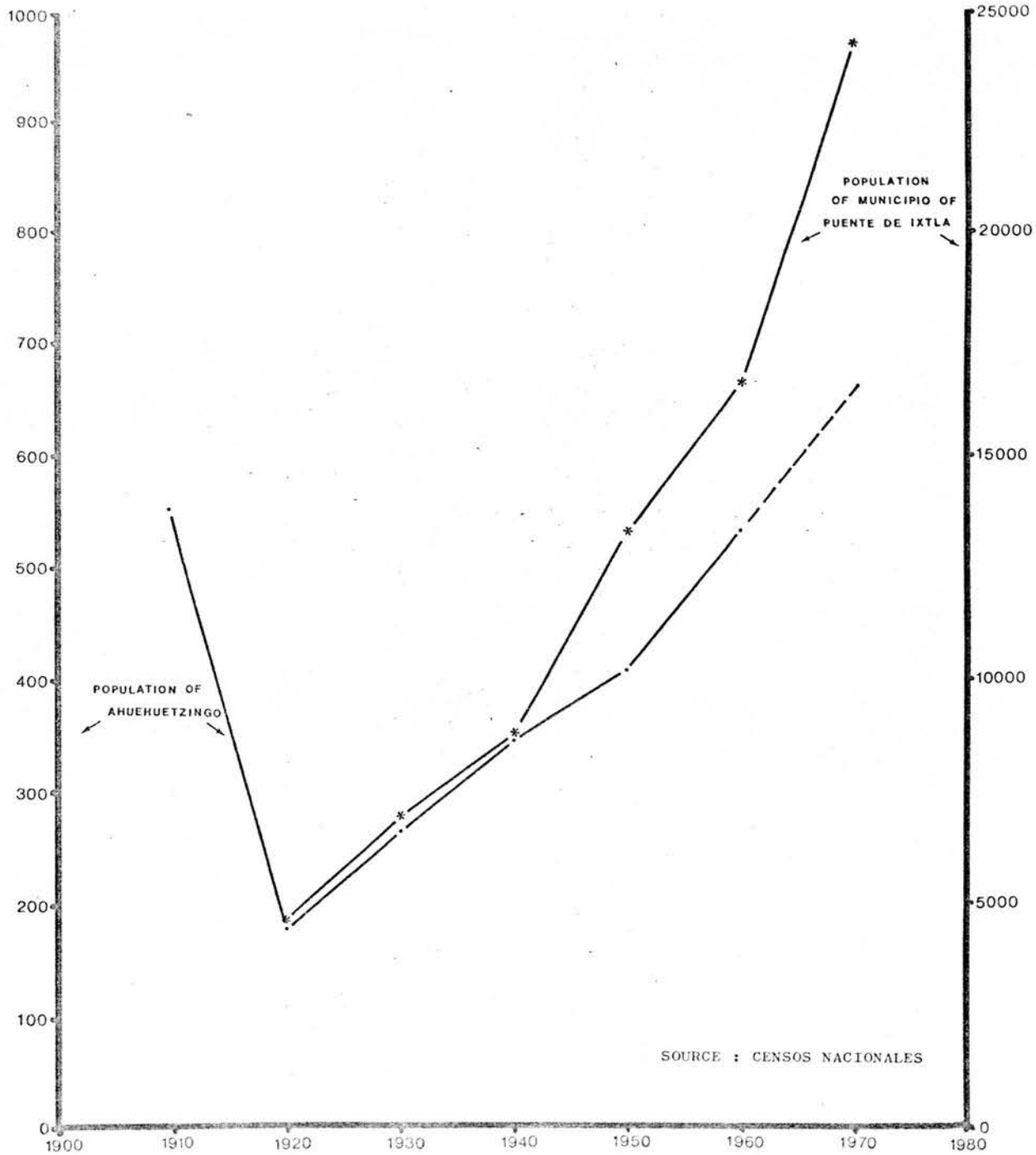

Fig. 3. Population

obtaining grants of irrigated *hacienda* land.[1] In the ten years from 1910 to 1920 the population fell from 551 to 178.[2]

The end of the revolution brought a government committed to agrarian reform. Although no claim was made by the villagers for restitution of any illegally seized land, in 1924 they petitioned the government for extra land on the basis of need. The claim was accepted and a provisional grant of 992 hectares was made. The grant was made absolute in 1927 when the 72 adult males of the village received an *ejido* of 1,140 hectares, of which 300 hectares were classified arable.[3] Land distribution, at the time of the original application, was fairly equitable with only one of the applicants having no land and two with over 20 hectares (but less than 30 hectares); over two thirds had between two and six hectares. The *ejido*, in conjunction with the communal and private arable land holdings of 352 hectares, gave average holdings in excess of nine hectares for each adult male.

Like most *ejidos* in central Mexico the amount of land received was dictated by that eligible for expropriation or, more simply, the land available. The density of the population was such that when the *haciendas* were broken up many claims could not be met in full and so land was allocated as fairly as possible

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1. Fromm (1970) pp.33-35.
2. *Censo Nacional de 1920*
3. *Departamento de Asuntos Agrarais y Colonizacion* (DAAC) Archives, Mexico D.F.

with each village's grant being bordered by its neighbours ejidos and pequeños propriedades. Initially this caused no hardship but later, as the population grew, with no more land available for expropriation, the arable area per head decreased. Landlessness again became a threat. For Ahuehuetzingo the land available to the village, after the land reform programme had distributed it, was ample and in fact more than could be fully cultivated by the villagers using traditional farming techniques. However, by 1960 the population had tripled to its pre-revolutionary level, and at the time of this study, in 1974, stood at around 700.[1] Inevitably, land pressures are once again being felt by the villagers; especially the young.

The four decades following the land grant were probably the most secure for the villagers. With adequate land for immediate needs, much lay fallow whilst the numbers of draught animals increased after the decimation of livestock during the revolution.[2] As the numbers of draught animals increased labour productivity improved and by the end of the 1930's no villager went hungry. Later the introduction of the steel mouldboard plough further increased both land and labour productivity enabling the villagers to grow more crops; much of the increase, for the first time, orientated towards the growing urban markets. Further

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1. See Fig. 3.
2. Lewis (1951) p.132.

improvements in living standards were limited by the dominance of middlemen and moneylenders, and the low levels and instability of the prices obtainable on the open market.[1]

The reduction in the population growth rate of the village in the decade after 1940[2] is probably attributable to the expansion in job opportunities in the cities as Mexico pushed for industrial growth. The bracero programme which recruited Mexican labour for agriculture in the United States may also have caused some to migrate to take up the job opportunities offered both directly in the programme and created by the migration from the rich, labour-short, sugar growing areas in Morelos.[3] The population reduction was not reflected in the municipio as a whole because the relatively constant demand of the sugar industry for labour in the harvest season ensured that immigration replaced those that left.

Other governmental policies have directly affected the village. A primary school was built in the 1930's. A dam was built in the 1960's as part of a scheme to implement small scale irrigation for communities otherwise unable to irrigate their land, and supplied water for some 35 hectares. In 1967 a well was dug and a diesel pump installed to provide potable water for the village. Electricity and electric lighting was brought to the village in 1970 followed closely by television receivers.

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1. This point is covered more fully in the section on co-operation.
2. See Fig. 3.
3. Fromm (1970) pp.49-51.

Also at that time a concrete basketball court was laid as part of a national plan to promote the sport; although it has never been used for its intended purpose it serves as a dance floor for occasional Sunday night dances for the young people of the village. Whilst this study was being made a health centre was built which was intended to be staffed by a visiting doctor.

All such inputs have brought about changes to the villagers way of life. Some are resisted but many have been accepted gladly. Today changes are occurring perhaps more rapidly than ever before and the villagers are showing an increasing confidence in their future.

LAND TENURE

Land tenure in the village is recorded in the archives of the Departamento de Asuntos Agrarios (DAAC) as being in four categories:[1]

1. Tierras Communales
2. Pequenas Propriedades
3. Zona Urbanizada
4. Tierras Ejidales

The arable land in the first two groups is registered and accepted by other governmental agencies as being private property which may be bought and sold. The house plots in the urban zone are also owned by individuals and may be traded and rented out.

The 'Tierras Ejidales' are not considered in law as village property. They are the property of the state but usable by the village under the provisions and conditions of the Agrarian Reform Law. This law also included Tierras Communales which, in Ahuehuetzingo, is interpreted as the non-arable parts of the original area of common land.

This law states that all ejidal land classified as arable is assignable to individuals and may be held by them, on a usufruct basis, for life and passed on to a designated heir. These lands may not be sold, rented out or cultivated by any individuals other than the ejiditario, except in special, defined, circumstances. Non-arable land is held in common and may be used by any member of the community provided that they only

1. See Map 2.

take an equitable share of the resources it contains.[1] This is intended to preclude over-grazing of the land by large herds of animals or the excessive extraction of timber by individuals.

The village lands cover some 2,500 hectares with just under 700 hectares being classified as arable. The ejido occupies 992 hectares of the total of which 319 hectares is considered arable. This is divided into parcelas giving each ejiditario an average of 4.4 hectares. The ejidal land received was divided amongst the original ejiditarios with the largest parcelas going to those with least land.[2] Grants are comprised of three or four small parcelas in different parts of the ejido as the land is of variable quality.

72 ejiditarios were originally granted land. This number has not increased even though the population has more than trebled since 1924. The only way, within the law, that the number farming the ejido may increase is for new ground to be made arable, as the parcelas may not be further sub-divided; only one heir is permitted to take over the lands of a dead ejiditario.

The DAAC surveyor who mapped the lands prior to the ejidal grant observed that much of the village lands, though marginal and being used as pasture, were potentially arable.[3] This land has remained unused for

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1. See Nueva Ley Federal de Reforma Agraria (1974) Articles 52, 55, 65, 67, 87, and 84.
2. Conversation with the Comisario Ejidal in Ahuehuetzingo.
3. DAAC Archives.

crop growing for a variety of reasons. Until recently land has been relatively plentiful and there has been insufficient hardship to prompt any radical change in attitude towards what is considered to be arable land and what is not. The boundaries of all the arable parcelas are known by the villagers and, whether private, common, or ejidal land, they are considered by them to be the property of the cultivator or title holder.[1] All the other lands are in fact, as well as in principle, held and used in common. For an individual to open up part of his land for cultivation would invite criticism of his action as he would be, effectively, seizing good common pasture land for his own use. In addition to this social constraint, under the law, land can only be re-classified as arable through collective effort.[2]

An individual may improve his own parcela by his own efforts without the risk of losing any of it. For example he may sink a tube well and irrigate what had been rainfed land. However, if he tries to increase the size of his parcela this is an intrusion into the common property. To simply start cultivating common land not only invites comment, but is illegal.[3]

Foster remarks on a campesino in Tzintzuntzan who in fact was increasing the size of his land holdings by cutting them one furrow larger each year.[4] This was

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1. Records of the legal titles to individual parcelas are rarely accurate as the lands have never been surveyed in detail and a tax on sales of land inhibits the reporting of transactions.
2. This is further examined with respect to the lack of co-operative effort to develop these resources in the section on co-operation.
3. Nueva Ley Federal de Reforma Agraria (1974) Article 71.
4. Foster (1967) p.112.

done without protest because of the trivially small increase in the size each year. Latent feelings of guilt did appear to be present indicating that the cultivator recognised that it was a social 'wrong' to do this. For an individual without land holdings to cut out a section of common land and commence cultivation would be almost unthinkable.

Because of the relatively easy access to land in the village thacolol, slash and burn, agriculture, as described by Lewis,[1] has not been used extensively in recent years. It may again become common if social and legal obstacles to the ploughing of marginal land remain.

The way land is actually used in the village is only loosely related to law. Ejidal land is both rented out and farmed by members of an ejiditarios extended family. Villagers know the illegality of some of their practices and this inhibits them when seeking 'official' aid or credit. One reason why a peanut growers' co-operative in the village was unable to obtain loans from an 'official' bank was that the tenancy of the land was ill-defined, with the cultivators not all being the legal tenants of the land for which they were seeking credit.

The situation is further complicated by the tax on land purchases which acts as a disincentive to registering private land exchanges. Records are grossly out of date. Many irregularities would be discovered,

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1. Lewis (1951) pp.129-157.

to the embarrassment of all, if these records were rigorously updated. Occasionally disputes develop between villagers over the tenancy of private land, but these are usually settled within the village, without recourse to law.

Whilst the writer was in the village there was a dispute over a *parcela* which had been unused for some years. This was in the territory designated as communal land and there was no title of ownership in the municipal archives. One of the young married men decided to seed the land. It was only then that a claimant stepped forward. He was an old man, without any sons, who had in recent years been unable to farm all his land. He maintained he had titles to the land and that the younger man was trying to cheat him. The other protested his innocence and the dispute was resolved by the younger man offering to pay rent for its use.

A common minor abuse of the law is the splitting of *ejidal* lands between sons. Santos farms part of his father's *ejidal* plots with his brother having the rest. Santos is the heir apparent, but even so there is little likelihood of him refusing to let his brother continue using the lands he has already been farming for two decades on their father's death. The private land owned by their father is also divided between them. Santos has 2.5 hectares of his father's 4.5 hectares *ejidal* grant and a private *parcela* of nine *tareas*. He also rents six *tareas* of irrigated land so that he can grow a winter crop of *maiz*. Other families resolve

the division of the lands amongst their children in similar ways and few villagers are completely landless.

With further commercialization of agriculture it is possible that this allegiance to the family may break down. This has happened in other villages and has led to a dualistic society, of the 'haves' and the 'have nots', with land being used exclusively for the benefit of the legal title holder.[1]

An abuse of the law which is causing much concern in the village is the use of village lands by a restauranteur (nicknamed by them Don José). He employs a number of villagers in his business, on the main road above the village, and as they are not able to farm their lands he rents them and cultivates them himself. He controls a number of ejidal parcelas and seems intent on expanding his activities. It was in this light that the villagers opposed his attempts in 1974 to take over the school parcela. Although Don Jose's activities are illegal, the villagers fear his power over the municipal council and so, as well as making representations to the council, they commenced cultivation of the disputed land. Historically possession of the land has been a much stronger argument in support of claims of ownership than the abstract legal rights and wrongs of the situation.[2]

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1. See Fromm (1970) pp.51-55 and Wilkie (1971) pp.93-99.
2. See Womack (1972) pp70-77.

PEOPLE AND LEISURE

Like most other Mexicans the people in the village are mestizos. Their dominant physical characteristics are those of their central Mexican Indian ancestors. They have straight black hair, brown skin and brown eyes. Occasionally recessive genetic characteristics are revealed in individuals, some having classic roman noses or oriental cheek bone structure. Amongst the villagers these differences are not an issue, although in middle class Mexican society there still exists a degree of prejudice based on appearance.[1]

The community has no remembered history of indigenous culture, nor of any language other than Spanish, and has been absorbed into the regional Hispano-American cultural pattern. The mature women wear ankle length dresses, normally with shoes and invariably when out of doors their reboso. The younger women and adolescents often wear light cotton print dresses, but they too use the reboso. This, as well as being worn around the shoulders, may be used to shade the head, to carry a baby whilst it is being discreetly suckled, or to hold the baby on its mother's back whilst she works. It is also one of the most important symbols of womanhood. As soon as they learn to walk, girls begin to practise the use of their reboso, although it may almost totally envelope them.

The men, who at the time of the revolution wore

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1. The writer, having markedly different racial characteristics, did not at any time, whilst he was in the village, experience any discrimination more serious than being called huero, fair one.

hand-woven white cotton shirts and calzones, baggy trousers, now, with the exception of the oldest, dress in mass-produced shirts and trousers.[1] Shoes may be worn on special occasions, but huaraches, the traditional leather strapped sandals, are retained for work. The sombrero, hat, is the major male symbol of masculinity and, as with the women's reboso, men are rarely seen outdoors without their hat. The styles worn vary but they are normally of the 'Stetson' type rather than the large charro hats which have largely passed out of use in central Mexico.

The village social structure is based around the nuclear family with a couple having, typically, five or six children. Child mortality is now low due to better food, water and health care than ever before. The 'price' parents pay for each new child is low. As it grows it is able to start earning its keep by helping in the house and in the fields. Children are a major source of security for a poor family. A child will be able to contribute economically whilst still young. On maturity the family may draw on the children for mutual support in times of need and they will support the patriarch in old age when he is no longer able to tend his fields. Birth control is now being promoted by the government, but this will have little impact on the village at present as the desired family size is commonly in excess of six children. It may, however,

1. Foster (1967) pp.307-309. The adoption of manufactured trousers in Tzintzuntzan was based on social pressures rather than on grounds of cost or comfort. Trousers are both more expensive and, reportedly, less comfortable than calzones.

provide relief for anxious mothers who dread having more children -that is, if they can overcome the moral objections raised by the Church.

Children are born in the village with the help of the partera, lay-midwife. When the family has sufficient funds the mother may go into hospital for the birth. This is the preferred option as many remember the times when infant mortality was high and many women died in childbirth. Señora Santos was of the opinion that all women should be able to go into hospital as she had when her youngest child was born.

Babies, until they can toddle, are never exposed to direct sunlight, but are carried from place to place in the folds of their mother's reboso. A baby that cries is immediately attended to, the most common remedy being to offer it the breast. Breast feeding extends well into the second year, and at times longer. This provides a useful supplement to the child's diet and a degree of contraceptive protection for the mother. When a child begins to walk it is permitted to play around the house, but is discouraged from remaining for long in direct sunlight. During the day toddlers wear few clothes, and generally have bare feet. At night, however, as the temperature drops, they wear more clothing, and invariably shoes or huaraches. These provide them with protection for their feet should they step on an alacrán, scorpion.

At an early age children are encouraged to enter into the work of the nuclear family – the girls fetching

water and running errands, the boys going with their father to help in the fields.[1] By the time a child reaches its teens it is considered to be a productive member of the family, able and responsible for helping in any way in which it is required.

Children are permitted to play with many household items, and may have one or two broken toy cars. Their attitudes towards animals is insensitive and often exhibits a degree of brutality that would be considered excessive in British society. Animals are considered as strictly subservient to man, and in exploring their surroundings children will sit and methodically dismantle a cockroach, or examine the insides of a caterpillar. Pet dogs which are kept for children's amusement and as a discouragement to would-be pilferers, especially at night, are frequently mishandled in play. They must not harm the children: the penalty for snapping or biting is a severe beating, and so the animals are most docile in the home. This pattern of behaviour, with its roles of dominance and subservience, is reinforced by the group play activity reported by Fromm and Maccoby,[2] which functions as an education into a relatively static village society. The games emphasise the arbitrary nature of authority. This is reflected in the home where the parents, especially the father, represent unquestionable authority.

This conception of authority also dominates adult

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1. Fromm (1970) pp.177-189 reports on child raising practice in a nearby village.
2. Fromm (1970) p.188.

attitudes towards external authority; be it federal, state or municipal, it must be passively accepted and is unalterable. This understanding of authority has many implications, such as the reluctance of a cultivator to relinquish any of the control of his parcela to a co-operative. Any such hand-over of power is seen as an irrecoverable loss of authority to decide what to do with the land and its cultivation, even though he would theoretically have the right to exercise control, in concert with others, over a much larger area of land.

As the children grow older their freedom to play is reduced as their responsibilities grow. Even so, marbles (and later football) occupy some of the boys' spare time. Girls have a greater number of chores as they are expected to help with younger siblings and, unless they manage to get a job away from the village or attend secondary school, remain in that role until they get married. At adolescence the boys experience the greatest change of role when they enter a period of apprenticeship. They are expected to do a full days work in the growing season and are then gradually permitted to partake in the adult leisure activities of 'pool'[1] and drinking.

Occasionally a Saturday night dance is held on the basketball court. This is organised by an entrepreneur who visits the village with a record player and all the recent 'hit' records. Admission is free but small payments are made when a particular record is requested.

1. American billiards.

The dance starts with the sexes strictly segregated but as the evening progresses the youngsters gradually pair off.[1] It is important to note that in such a small community, even though all the participants are familiar to each other, a degree of formality and distance is maintained. This may also be observed in the adults who, outside the family, normally use the formal, usted, form of address. The maintenance of this distance in personal relationships reduces the degree of disruption caused by disputes between the members of this fairly closed community.

In struggling to display their manliness the young men exhibit the overt signs of machismo. These include, in varying degrees, arrogance, aggression, drunkenness, and lasciviousness. Although considered to be healthy manifestations of manhood there are social norms which if exceeded reduce the prestige of the individual. Machismo is especially displayed by the adolescents at fiestas, of which there are two a year in the village. To prove their manliness, they must mount and attempt to ride a bull. To 'reinforce' their courage the aspiring youngsters often take an excess of alcohol and as a result injuries are not uncommon. As an initiation rite it is unequalled in the village and no young man is respected if he has not attempted to montar el bravo at least once.

Married men, too, are expected to display these characteristics, but they are not so critically involved

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1. A close parallel may be drawn with village dances in England where a similar pattern of behaviour may be observed.

with status. For the adult (i.e. in the village context, married)[1] male status is largely determined by other factors.

Marriages, in most cases in the village, are simply common law bonds entered into when the woman is pregnant or after a child has been born. Some are married in the church and go through the civil ceremony but both these courses involve some expenses.[2] Marriages have been considered in the past to be more concerned with setting up a house and raising a family than with romantic love.[3] Both partners, once married, are considered adults able to enter fully into village affairs and free from the parental domination which characterizes childhood and adolescence. The incursion into the village of television, with its promotion of romantic love, and the cartoon romantic novelettes, so widely read, are having some effect on the attitude towards love and marriage, but 'love bonds' are still the exception.[4]

Adulthood for the woman means full acceptance into the village women's gossip sessions, the society of the initiated, and, as soon as she can set up a separate household, becoming fully responsible for running her

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1. The writer, being married, was readily accepted in the adult role but rather disconcerted Santos, with whose family he ate whilst in the village, because he made no passes at his eldest daughter. To do so would have been a breach of etiquette, but it concerned her father that perhaps she was not considered attractive. To have made advances would have been quite 'understandable'.
2. Santos and his wife after some twenty years together had decided to get married legally, following a government campaign to encourage legal marriage, and legitimatize their children.
3. See Lewis (1969) pp.97-126.
4. See Fromm (1970) pp.148-152.

own home. For the man it means the right to associate with the married men, to attend the village meetings as a head of household and, where possible, to start cultivation of his own land – the land having been either given to him, by his parents, or rented. Occasionally, when the parents have no land and an ejiditario has died without naming a successor, a young married man may be permitted to take over such 'free' land and become an ejiditario.[1]

Social life for the women is centred around the extended family and the Church. Women always predominate in the congregation of the village church and often attend services daily. This is especially true of older women with few family responsibilities.

Men have a greater number of options, but most leisure time for them is spent talking around the ayudantia municipal, the council building in the village. This is usually quiet inconsequential chatting about minor matters whilst smoking cigarettes.

Though all the men are intimately acquainted, and in contrast to urban practice, the formal manner of address is the most commonly heard. This, as analysed by Foster,[2] is partially the formality of campadrazgo relationships where close friendship ties are cemented by the friend becoming the godparent to a son or daughter. Traditionally the campadre must be addressed

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1. Whilst the writer was in the village it was decided at a village meeting to make one of the young married men an ejiditario for this reason.
2. Foster (1967) pp.80-81.

formally out of respect. Others, though of long acquaintance, may not be considered friends and so, too, are addressed formally. Only in drunkenness does the formality break down and the familiar, tu, form of address become common.

Occasionally a group may go to one of the four beer-selling shops, to have a drink or to the 'pool' hall. Drunkenness is not very common in the working week because of financial constraints, but at the weekend, especially Saturday nights, it is the male norm. Although the maguey cactus does not grow in the region pulque used to be widely sold in the villages and is still available very cheaply at fiestas. Nowadays pulque drinkers are considered sots. This attitude is re-enforced by the breweries, whose advertising in rural areas is specifically aimed at capturing the pulque market. On special occasions spirits are drunk. The cheapest is raw cane alcohol, aguardiente, diluted with orange juice, but tequila or mescál served with lemon and salt are preferred.

Drunkenness is looked upon as an escape from the daily grind and those under severe pressure resort to drink for solace. In some villages, such as the one studied by Fromm and Maccoby, alcoholism is rife. The ability of ejiditarios there to earn money by letting a sugar co-operative farm their land, but without them being responsible for or in control of the cultivation, was a causative factor and this, they suggested, coupled with character deficiency led to the adult male alcoholism

rate of 18%.[1] Their analysis is supported by at least one of the heavy drinkers in Ahuehuetzingo who felt trapped by his circumstances and, when drinking, talked of a fantasy world in which he would become a guerrilla so that he could shoot people with a machine gun.

In Ahuehuetzingo the preconditions for such large-scale alcoholism are not present. The cultural history is that of independent villagers, not of hacienda peones, and economic returns (and, more harshly, survival) are dependent on working the land. Insufficient rent to support such an expensive habit could be derived from renting out their rain-fed parcelas. One of the heavy drinkers had got so badly in debt that by the end of the dry season he was forced to sell his donkey and its foal for 200 pesos – a price less than one-half of their usual value because of the poor condition of both animals, which he had not fed adequately. The urgency with which he needed money also lowered the selling price. With such economic penalties, and the need for a high level of individual responsibility amongst village males, alcoholism is limited to only a few men, including the 'pool' hall owner whose income is not affected by his habit.

Recently other leisure-time activities have become part of village life. Transistor radios are much in evidence and have been in the village a number of years, and most families own or have easy access to one. Since the introduction of electricity, television has

1. Fromm (1970) p.156.

become a major interest, especially amongst children. Few private houses have receivers, but significantly, two of the shops selling beer and soft drinks had them installed to attract custom. Many parents do not like their children spending so much time away from home watching all manner of programmes, and so are struggling to install one in their own houses. Those who have done this have achieved, of course, a new social status.

Plate 4. Jacales on a house site (note the new brick house being built to the left of the picture)

HOUSING

Village housing, as shelter, has to provide shade from the sun and protection from the summer rains. Socially, houses provide family privacy and are indicative of wealth and status. House sites are usually surrounded by fences or walls both for privacy and to contain the animals which are kept around the home. A site may house a single nuclear family, often on a section of the patriarchs house site, or be a group of houses of an extended family clustered around a central patio.

The simplest and cheapest house is the jacál. This is a single-room dwelling of timber-frame construction. The walls are about a metre and a half high and made from a woven mat of sticks sealed with mud and dung. The peaked roof extends well beyond the walls at the sides and is thatched with the spiky leaves of a bush which grows in the scrub land to the South of the village. There are no window openings, and light enters only through the entrance at one end. The floor is of compacted earth. A family typically has two jacales, one used for sleeping and another for cooking, and eating.[1] Each lasts about ten years. One will have a roofed veranda to provide shade for sitting and talking and for the small children to play out of the sun. Animals, too, are provided with shade by a thatched roof supported on a wooden framework.

Adobe is the other traditional building material. All of the older buildings in the village, including

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1. See Plate 4.

the church, are made of whitewashed plastered adobe. There are two quite grandiose adobe houses near the centre of the village, which have elegant facades and glazed windows, although the families owning them are no longer wealthy. In recent years adobe has been used only for buildings which lack prestige value, such as kitchens, or where financial constraints prevent the use of more expensive materials. It is probably for this reason that few of these newer buildings are plastered.

To plaster adobe buildings stones must be stuck, at the time of construction, into the mud used to 'cement' the blocks together so as to provide a 'key' for the plaster. None of the more recent adobe buildings have had these 'keying' stones inserted and so could not at a future date be plastered. Although plastering increases the life of the structure it also increases the costs; for a building with little status value it is considered unnecessary. Stone footings are used for all adobe structures to prevent erosion in the rainy season. The roof and floors of the older, more elegant, buildings are made from locally-baked clay tiles. More recently built ones have asbestos-sheeting roofs, and earth floors. Door lintels may now be made from reinforced concrete cast in situ rather than being made of wood.

In the last thirty years, kiln-fired bricks and concrete have replaced adobe as the most prestigious constructional materials. Building techniques are

virtually identical to those used throughout Mexico. The buildings are flat-roofed and rectangular with walls built up from a single thickness of bricks within a steel reinforced-concrete frame that is cast in situ using wooden-plank shuttering. Door and window lintels are similarly cast. The houses usually have more than one room and, without exception, the reinforcing steel extends beyond the structure to permit subsequent extension. The brick walls, which are not load bearing, are bonded with lime/*mortar* as this is less than half the price of cement. Roofing may be provided by corrugated asbestos sheeting or be cast in reinforced concrete. Flooring is of concrete or tiles.

These buildings, although more popular than adobe, are in some ways inferior. Walls of single brick construction do not provide much thermal insulation and have a lower thermal capacity than the much thicker adobe brick. Ventilation is often inadequate, as the solid roofing does not allow a flow of air to pass through it, as do both thatch and tiled roofs. The windows are small. The result is that these buildings heat up rapidly in the day, and do not have such an equitable temperature regime as do traditional houses. They are also much more expensive and use none of the materials that are freely available around the village. The bricks used are produced in small brickworks in Morelos, but both the lime mortar and cement are produced in large industrial plants. As a result such buildings cause a net drain in resources from the village.

To the villagers brick houses represent progress and modernity. Santos with his wife and children had lived for 17 years, throughout his married life, in jacales, one for sleeping and one for cooking. Since 1972 he has been constructing a new brick home. This was possible as a result of his increased cash income which followed the formation of a cacahuate, peanut, growers' co-operative in 1971. As money became available he bought materials and constructed the building himself in the slack winter season. After two years of building the two-roomed structure he required only a roof for completion. He hoped to be able to buy materials for it at the end of the harvest in October of 1974. The new house was built by the road-side boundary of his existing house site (the jacales had been built further back towards the site centre). Behind it in the spring of 1974 he built an adobe kitchen in preparation for the completion of the house. This new home was the greatest capital outlay he had made and had precedence over being connected to mains electricity or the domestic water.

None of the houses in the village have flush toilets; most use earth latrines dug at the back of the house site and screened with a stick fence. There is one public toilet in the centre of the village which is simply a small stone building with a raised seat. The excreta drops onto loose stones below where it is promptly eaten by scavenging pigs. Only the recently-constructed medical centre has a flush toilet.

This is connected to a subterranean settling tank and soak-away. These sanitary arrangements caused little interest amongst the villagers. This would seem to indicate that at present there is little desire, neither for reasons of hygiene nor prestige, to invest time and money in changing existing practices of earth latrines on the house site.

A house of 'quality' is of great importance to the villager in so much as it helps him to gain the respect of his peers. It is, however, not the only way in which prestige may be gained: Santos had been elected Ayudante Municipal, sometimes called the village President, two years previously: this, as well as conferring a degree of status, also acknowledged a status which far exceeded that indicated by his dwelling. Status may be acquired from many things such as honesty, reserve and capability in dealings with outsiders.

During his two year office the municipal council had provided the materials for the construction of a new Ayudantia Municipal, Municipal Council building, in the village. The building was single-storied, of usual construction, but when the villagers were offered the possibility of an extension they decided to add a second storey. This may well set the pattern for the next generation of prestigious village houses.

THE HOME

The home consists essentially of the house site, sleeping quarters and kitchen, and is the responsibility and under the control of the wife. The privacy of the home is jealously guarded and formally respected by all villagers. If someone, who isn't of the immediate family, wishes to talk to the householder, or his wife, they will call from the gate to gain permission to enter. Rarely, if ever, will a villager cross the threshold of the house site without invitation. Though the illusion of privacy persists, in actuality, little of note occurs in the village unnoticed; gossip is rife.[1]

The wife rarely works in the fields with her husband. Her main functions are the care of the children and the animals around the home, and the preparation of food. In the traditional kitchen one corner has a raised hearth for a wood fire. Chimneys are never used; the smoke from the fire either finds its way out through the thatch in the jacál, or through an opening in the wall above the hearth in an adobe kitchen. The permeation by smoke of the thatch is believed to drive out insects.

The wood-burning fire may be supplemented by a metal charcoal-burning stove,[2] fuelled from the embers of the fire. Wealthier villagers have exchanged their wood

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1. The fear of eavesdropping sometimes inhibits villagers from having windows on the boundary side of their houses. See Foster (1967) p.105.
2. These are fabricated throughout Mexico from square metal tins.

fires for bottled gas or paraffin cookers. These are considered by most women to be desirable luxuries as they ease the work of food preparation, the most time-consuming activity in the home. Invariably, the acquisition of a home with status takes precedence over a stove; none of the jacales had cookers and only a few of the other homes.

Tortillas, flat maiz pancakes, are prepared from maiz dough, masa, and cooked on a flat tray, camál, which may be either of pottery or metal. The flat end of an oil drum was used in Santos's home. The maiz was formerly ground on a metate, a three-legged grinding stone. Now it is ground by machine, at a cost of 20 centavos a kilo, and only finished on the metate. The eldest daughter of the household is reponsible for the preparation of the masa and if the mill breaks down it is she who bears the brunt of the maiz grinding. This is very hard work and some three or four hours grinding will be required to provide the day's tortillas. In the rainy season when there is much farm work to be done the food will be carried to the fields for the midday meal. Breakfast and the evening meal are taken in the home whenever this is possible.

Animals kept on the house site include pigs, chickens, turkeys and, always, a dog. The management of such livestock is the responsibility of the wife. Donkeys, cows, oxen and goats, which may also be corralled at night on the site, are looked after by the husband.

About one-half of the house sites in the village have running water. This is provided by the village diesel pump which is used daily to pump water from a well to an elevated storage tank. Those without their own water outlets use the public taps, of which there are five. These work only whilst the pump is in operation and the children are expected to help in taking buckets and other receptacles to be filled for the family's requirements for the day. Such water is stored both in concrete tanks and in pottery jars. Even those with running water install concrete tanks under the taps and these are refilled each day as an insurance against pump failure. If the pump is out of action for a few days, water has to be brought from the freshwater spring which surfaces below the village. When this happens a donkey or horse is used to carry the jars as the spring is too far away for the water to be readily carried by hand.

The house site is considered the safest location for all possessions. The only assets not under constant surveillance are the growing crops and the horses which run free in the scrub lands; these are branded for identification. Any cash is usually secreted somewhere safe in the house. Grain and <u>frijoles</u> are stored by individual families in sacks, boxes or concrete containers within the house site. When crops are harvested these too are brought back to the home as quickly as possible to prevent pilfering. Most of the harvest of <u>maiz</u> and

frijoles is retained for consumption. The rest is sold as soon as possible along with cash crops such as *cacahuates* and sorghum.[1]

1. Although there is a great fear of theft there is little crime in the village. In the five months the writer was in the village the *carcél*, in the *Ayudantia Municipal*, was used for nothing more than storing building materials.

LITERACY AND EDUCATION

In Ahuehuetzingo education is generally considered a 'good thing' - a view to which most villagers subscribed when spoken to by the writer. However, the degree of literacy, even of the younger villagers, is not very high.

The first school, built in the 1930's, provided free primary education to all the children of the village. Consequentially most of the adults have some education but, as subsistence farmers and their families have little cause to read, few attain much reading proficiency or make use of the academic skills they possess.

Education is seen, especially by the young, as a means of escaping from the village; if insufficient is acquired for this purpose then it is of little value.[1]

As the population of the village increased a larger school was built, in 1961, to provide the first four years of the prescribed national primary curriculum of six years. To progress further necessitated travel to Puente de Ixtla. The purchase of uniforms, the payment of bus fares and other sundry expenses made it economically impossible for most parents to send their children out of the village to school. Even so a number of children attend secondary school in Puente de Ixtla. Two former scholars from the village managed to continue their education sufficiently far to become teachers.

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1. Fromm (1970) pp.139-140 in an extensive analysis found that literacy and education were not correlated with material success in the village in Morelos that they studied.

Government policy, however, prevents them returning as teachers to their own village.

The courses run by the village school follow the national curriculum, and books and the minimal necessary materials are provided free. The style of the education is, however, very regimented and the quality of teaching staff indifferent. The children, discouraged by this, often find excuses for staying away from school and when the rainy season arrives are often encouraged to do so by hard-pressed parents who need help with the work. As a result, many fail to complete even the first four years of primary schooling as they cannot pass their grade exams at the end of the year.

A fairly graphic example of the difficulties encountered by a youngster in attaining success academically can be found in the history of Ernestina, the eldest daughter of Santos. Both her parents are intelligent and alert. Her mother completed primary education and is very keen on helping her children learn from the free books provided.

Ernestina, who was at the time of this study sixteen, is a very calm, capable girl. She had completed her four years primary education some years previously and had been attending the primary school in Puente de Ixtla when her mother became very ill whilst pregnant with twins. As the eldest daughter she was 'obliged' to leave school to look after her father and two younger sisters, and to nurse her mother. It was many months

before her mother recovered fully and by that time her younger sister had graduated into the fifth grade and was herself attending the school in Puente de Ixtla. As there was insufficient money for them both to go Ernestina was forced to remain in the traditional domestic role of the eldest daughter and continue to help her mother.

Her younger sister later went on to Mexico City to live with an uncle and, was, at the time of this study, attending secondary school there. In the meantime her mother had another child and so again her eldest daughter was unable to continue her education. At the beginning of the 1974 academic year the school was given the extra staff it needed to provide the full six years of primary education. So after five years absence Ernestina was able to return to school with the promise that if she completed primary education her parents would send her to secondary school. Unfortunately, in the intervening years the system of education had changed slightly and the fifth grade were still expected to print letters. Ernestina, who writes in a most elegant script, was severely reprimanded when she tried to write her exercises in it and was forced to learn the current orthodoxy in printing. This was compounded by such frustrations as the class having to write from 0 to 1000 in roman numerals; this was presumably to ease the work-load of the teacher. Not surprisingly such frustrations were rapidly dampening her enthusiasm to learn.

Though education in the village has its limitations and does not attain its full potential, it has had a significant effect. Most villagers are able to read aloud, albeit slowly, and are able to count. In practice this means that villagers are able to keep the community's accounts and can understand letters sent from municipal and state authorities, although replies are normally made by personal representations, rather than by letter.

This access to the information contained in the written word has had some effect on village development. This is exemplified in the case of Santos in his knowledge of the use of pesticides and fertilizers, both of which he uses to a limited extent. This knowledge came almost entirely from reading manufacturers' literature.

Sadly, this potential has not been fully utilized by government agencies wishing to effect changes in agricultural practices and improve rural economic conditions. No promotional information of this nature reaches the village. The only representations are made by occasional visits such as the C.N.C.[1] representative advocating the use of improved seeds or a lady promoting family planning as part of the President's national campaign to limit the growth of population. The principal literature read in the village, by both men and women, is the romantic comic.[2]

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1. Confederación Nacionál de Campesinos.
2. This form of illustrated literature has a vast educational potential which remains largely untapped except for a few publications, mostly by non-government agencies. None of these were seen in the village whilst the writer was resident.

WORK AND MIGRATION

Working the village lands provides the principal source of employment and income in the form of cash and commodities. Some villagers, such as the shop owners, derive their income indirectly from this source by the provision of services whilst others have taken up full-time work outside the community when the opportunities have presented themselves.

The insecurity of rainfed farming and the seasonal nature of all employment in agriculture has meant that many men have had to take up secondary trades which may be practised both within and outwith the village. This, as well as providing a buffer against the vagaries of nature, has led to a skill generation which could potentially become the basis of a move away from farming as the principal source of income for an individual. Santos had diversified his sources of income by developing plumbing skills after the village well was dug and the diesel pump installed. He is now able to contract out his labour when villagers wish to be connected to the water main. He also has the responsibility for running the pump for which he receives a fee of 10 pesos a day. This provides a steady cash income for his family.

Most villagers with sufficient land to farm retain this as their primary income-generating activity, as working your own land is considered to be the most secure basis of a livelihood. It continues to be the practice for some villagers with land to accept work as day labourers in the nearby sugar cane fields.

This work is also seasonal and peaks when the labour demand for farming in the village parcelas is high and so is only taken up reluctantly when times are hard. The rate of pay for such work is relatively low and most of the day labourers, jornaleros, for this work come from the mountainous state of Guerrero where cash crops are much more difficult to get to market and where farming can provide little more than a subsistence for most.

Four villagers have given up farming in favour of wage employment locally in the restaurant on the main road, two kilometres away. Their land is rented to, and farmed by, the restauranteur. From this they receive a steady and secure income and appear well pleased with the arrangement. Otherwise there is little opportunity for full-time wage employment for those living in the village.

The young are generally willing to seek work outside the village. They may, as in the case of Santos's daughter, attend secondary school in Mexico City, whilst living with a distant relation, and subsequently find permanent employment there. It was Ernestina's wish to go to the city for her education and to become a secretary. Some migrants return after a few years; Santos in his youth worked as a waiter in San Vista Hermosa (eight kilometres distant) for four years and then returned to marry and settle down. His experience is being paralleled by a village youth who works in Cuernavaca as a waiter. Many migrants adapt to city life and

visit their village for festivals and holidays, but, as their own responsibilities increase, such visits become less frequent and contact with the village becomes tenuous.

The desire of the young to leave the village is explained in part by the natural exuberance of youth and in part by frustration at the economic conditions and apparent social stagnation. This is aggravated increasingly by the penetration of the mass media which continually portray life styles remote from those experienced in the village and region.

One youth, who at the age of 17 is a renowned drunkard, was forever in debt. The son of poor parents, he felt that he had been unable to get sufficient education to enable him to find work outside the village. His father had only a small parcela and the family's life was hard,and the youth wished to join the army to make a career for himself. In this way he would not be 'condemned' to the life style of his parents with little hope of improving his own and their positions. His parents, who did not want him to leave the village, put a lot of pressure on him to stay. His reaction to this dilemma is typical of the campesinos response to stress throughout Mexican history; accordingly he turned to drink. This, of course, has always compounded the problems of poverty in Mexico as in other societies.[1]

Once married the young men become more reconciled to the village situation and are less likely to leave

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1. Cumberland (1968) pp.203-205.

the village to seek work other than in the most extreme circumstances. Santos hopes that with his income from agriculture, and from his secondary activities within the village, he will not have to work outside it again. However, he knows that in exceptional circumstances, such as the failure of the rains for two years in succession, he will be forced to go elsewhere, even to Mexico City, to find work.

Some occasional employment is provided in the village by government building programmes. In 1974 a medical centre was built for the use of a doctor on his intended weekly visits to the village. The work was carried out by a craftsman, brought into the village by the architect, and two village men who had had previous building experience.

Members of two families find employment making adobe bricks at two river-side sites. The bricks, cast in wooden moulds and sun dried, sell for a peso each. Others gather the leaves used for thatching. One old man, incapable of any physical labour, stations himself under a large mango tree when the fruit is ripe and picks them up as they fall off. These he sells five for a peso. Many other minor jobs are carried on within the village and serve to redistribute the income gained from agriculture.

Women, too, undertake income-generating work. Those with families but without husbands, through death or desertion, may start small businesses. Two of the smaller shops are owned by widows who were forced to

look for alternative sources of income as the rent they received for their land was insufficient to support them and their families. Another widow sells flavoured crushed ice and fruit. Five women sell sweets and fruit to school children in the week and to players and spectators after the football matches on Sundays.

Two families are notably successful entrepreneurs outwith agriculture. One owns a mill, for grinding maíz, which cost 12,000 pesos and was bought originally from money gained through agriculture; this family owns sizeable land holdings and is wealthy by village standards. The other family successfully operates a small shop selling beer, soft drinks, cigarettes, bread and cakes. The latter items are baked daily in a wood-fired home-made oven. This family also owns a treadle sewing machine and, whilst the wife serves in the shop, the husband works as a tailor in response to receiving orders. Their sustained enterprise has helped in their financial success. They were one of the first families in the village to own a television receiver and used it to draw custom to their shop. They also serve their drinks chilled, using ice delivered to the village more-or-less daily, which boosts their sales. This dynamism has had its influence on their children. One son is academically successful and attends secondary school in Puente de Ixtla. He hopes to become a doctor and may well achieve his ambition. The eldest son was less successful at school and, although a competent guitarist, believes that his parents do not respect him

as much as they do his younger brother. This has produced a feeling of inferiority which manifests itself in his drinking to 'excess' by village standards.[1]

Although it is possible to find unskilled non-agricultural work outside the village it is only through the generation of skills, especially education, that villagers feel that finding a non-agricultural job outside the village is assured. For this reason education is sought, particularly by the girls of the village who often feel there is no other way for them to get away, and the two of them that have received sufficient education to become teachers now work outside the village.

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1. The norm is for a man to be drunk at least on a Saturday night. If drinking is sufficient to affect an individual's capability in the working week then it is considered by most excessive.

AGRICULTURE

Agriculture is certainly the primary economomic activity of the villagers. Most families have access to arable land either of their own or that of their parents. Land pressure has not yet reached a stage where landlessness is considered a severe problem.

Ninety-five percent of the arable land is rain-fed and the average family farms about four hectares. Usually, this land is in several scattered parcelas in different parts of the village lands in separate fields of about eight tareas, 0.8 hectares.

The largest area is sown with maíz which, may be intercropped with frijoles. Both these crops are principallyfor family consumption and are the traditional basis of the village economy, with the surplus being sold to realize a cash income.

To the west of the village an area of some 40 hectares is sown with cacahuates, peanuts. This is a cash crop which has been planted in increasing quantities over the past 20 years. The concentration of this crop in one section of the arable lands is said to be because the coarse sandy soil of the valley is unsuitable for maíz. The villagers' explanation is that the soil is 'cold' and maíz requires 'hot' soil to thrive. Such an explanation, corresponding to the Greek humoral pathology based on four humours (hot, cold, wet, and dry) has been considered by Foster.[1] Scientific explanation would probably account for the failures in

1. Foster (1967) pp.184-191.

terms of soil structure, drainage and nutrient deficiencies.

The consistent failure of the preferred crop stimulated the changeover to an entirely cash crop. Once the main crop of maíz has been planted other cash crops are planted on surplus land. Tomatoes are planted out as seedlings whilst melons are seeded in field edges and, occasionally, loosely intercropped with the cacahuates. Sorghum is also grown for its fibre and seed, and is cultivated in much the same way as maíz. It is more drought resistant than maíz and can tolerate poorer soils and is sown on the valley sides to the east of the village. Sorghum is also potentially an animal fodder crop but neither this nor any other crop in the village is grown specifically for fodder. As with maíz the leaves and stems are used for fodder; these are left standing in the fields until required. There is no tradition of storing fodder in ricks nor of composting vegetable wastes for manuring the land.

The maíz planted by the villagers is mainly locally-produced seed of traditional varieties which have evolved, by selection of cobs with 'good' characteristics, to suit local conditions. With all crops the best of the harvest is held back for the next years' seed. In this way a number of local varieties have developed, each with its own recognised attributes. Each type of land has specific traditional maíz to suit it.

Since the early 1960's hybrid seeds have been available but have not been adopted extensively. Hybrid maíz, although potentially high yielding, presents some difficulties for the non-commercial cultivator. The seed is relatively costly and, to get a return significantly greater than normal, quantities of mineral fertilizer have to be used. Perhaps most significantly in the village context, it is much more susceptible to drought than the local varieties, which have been developed in the situation where partial rain failure occurs on average one year in three, resulting in yield-reducing water stress in the plants. The penalties for a family with few economic reserves of a harvest failure are severe and so few have chosen to use the seed varieties in any substantial way.[1]

Santos prefers a traditional maíz called 'Lengua de la Pareja', 'Birds tongue', which yields well in indifferent conditions of soil and rainfall. Its market value is, unfortunately, low because the purple grain is considered unattractive.

He reported that some farmers who have bought hybrid seed had found that although the initial crop was not significantly better than that from the traditional varieties (probably because of insufficient, if any, fertilizer application) in subsequent years replanting the seed derived from the first years' harvest brought improved yields. This benefit was probably derived from a 'genetic-mix' between the

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1. Lipton (1968)

dwarf high-yielding hybrids and the hardier less-prolific local varieties. After the first four or five years of using this locally-hybridised seed, all advantage seemed to have been lost as the seed became more and more similar to the local varieties. Some of these farmers continued to use this mechanism to increase their yields by planting a small plot of purchased hybrid seed and using the yield from this crop as seed for their main maíz crop the following year.[1]

Santos had not used hybrid seed until 1974 when he planted small plots, in each of his separate parcelas, with different local varieties to see if changing varieties would improve his yields above the 17 cargas (1,190 kilogrammes) per hectare that he averaged in a normal year.[2] Even with this local experimentation it is unlikely that yields will be raised significantly until more tolerant hybrids and increased nutritive inputs are included in the agricultural cycle.[3]

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1. Belshaw (1967) p.66. reports on the purchase of hybrid seeds and the replanting of derived seed. A similar dilution effect was observed over three years with continual worsening of yields. The land may have been more fertile than that in Ahuehuetzingo. Other villagers in Belshaw's survey stated that hybrids did not produce, indicating that their land was not sufficiently fertile to use fertilizer sensitive hybrids.
2. A similar experimental approach is described by Belshaw (1967) p.57. Maíz is traditionally planted in Huecorio before the rains commence and a villager decided to verify the usefulness of this practice by planting one of his milpas partly before the rains and partly after. In that location with local seeds the traditional practice yielded a better harvest.
3. Although maíz is not normally nitrogen-fixing recent research suggests that some traditional varieties may have a symbiotic relationship with nitrogen-fixing organisms. See Dart (1975).

Crop rotation is largely unknown but the value of leaving land fallow is well understood and practised. Intercropping frijoles, which fix nitrogen, and maíz is done frequently although it is not considered to improve yields of maíz.[1] The main reason for the practice appears to be that it uses the land more effectively and if surplus land is available extensive intercropping is unlikely to be used. Intercropping and rotation have not been developed to any great extent within the village and consequently their potential remains unknown.

For the cash crop of melons both fertilizers and pesticides are used to improve yields. In the long term the use of fertilizers for maíz would be likely to increase yields and income but risk capital is not easily raised. A C.N.C. representative visited the village in the late summer of 1974 to promote the CONASUPO[2] scheme under which hybrid seed is provided without initial charge but with 5% of the resulting harvest being taken in payment. This scheme was intended to increase national maíz production, but was not linked to any arrangement to provide the essential fertilizers. Capital for this could be raised by the formation of a credit union[3] able to

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1. This is supported by Belshaw (1967) p.68.
2. CONASUPO - Compania Nacional de Subsidios Populares - this is a Federal Government venture.
3. A credit union is one of the looser forms of co-operative organisation recognised by the government and may be formed by ejiditarios and small landowners. If such a group could be formed it would be entitled to ask for a loan from one of the 'Official Banks'. Some of the difficulties encountered by such organisations are discussed in the Section on Co-operation and in Chapter 4.

approach a bank for a loan. Alternatively the villagers themselves could sink their own small reserves into the purchase of the fertilizer but, as already indicated, this is unlikely.

Fertilizer is used for maíz, but only when there is little alternative. For example the irrigated land is owned by a few families who rent out a large part of it. Santos rents six tareas of this land and had been using it continuously for six years. Under normal circumstances this land would be left fallow for two years to recover. If he had done this then he would have had to continue paying the rent for two years without receiving any income from the land or lose it, to someone able to pay the rent, and so lose his winter crop of maíz.

A similar threshold was being reached by the growers of cacahuates. A marketing co-operative had been formed, four years earlier, to improve the returns to the producers by eliminating the middlemen, known locally as coyotes. This had been successful and the real incomes of the growers had been more than doubled. The relative cost of fertilizers was therefore less, and so the co-operative had attempted to buy fertilizers in 1974 to maintain production as the land was reaching the state where it would otherwise have to be left fallow.[1]

With the increasing market price of maíz and other

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1. Although nitrogen is fixed by peanuts other deficiencies develop with time - see Dart (1975).

crops with respect to mineral fertilizer prices[1] its use may be expected to become more common, especially if this trend is buttressed by making risk capital more readily available.[2]

In the summer of 1974 Santos had some 17 tareas planted with maíz and 12 tareas with cacahuate. On seven tareas the maíz was intercropped with frijoles and another half-tarea, next to the cacahuates, was also planted with frijoles.

The maíz, he expected would yield about 30 cargas of which he hoped to sell four. This sale would realize some 400 pesos which would cover the cost of the occasional hiring of peones at critical times of the cultivation cycle. Eight cargas were committed for the rental of the bueyes. This would leave some 28 cargas, including the yield from the winter crop on the irrigated land for family consumption and for seed - a potential average daily ration of about 0.7 kilogrammes per head for Santos and his family. About half a carga of seed is retained for the following years' planting. The family 28 cargas has also to cover storage losses, due to insects and rats, which may be as high as 25%.

The cacahuates were expected to yield some 23 cargas.

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1. Silos (1975) Cuadros XXV and XXVII.
2. In Huercorio the setting up of small poultry units had made a lot of chicken manure available this had been mixed with abono de corral, animal manure, from the house site, and applied by hand to the fields as low-cost fertilizer. This as far as I could ascertain, was not done at all in Ahuehuetzingo and certainly chemical fertilizer was considered to be the only action which could be taken to keep the land in continuous production. See Belshaw (1967) p.58.

Of these one carga would be retained for food and seed and the rest sold. If the co-operative achieved its aim of paying 300 pesos per carga then the gross yield would be 6600 pesos. The net yield would be less as the 20 peones Santos expected to hire for harvesting would cost about 400 pesos and a further 400 pesos had been spent in hiring help during cultivation. The income he would derive from this would then be 5800 pesos. This is considerably greater than that realized before the prices were forced up by the co-operative.[1] In 1970 he made less than 2000 pesos from a similar cropping pattern. It was as a result of this large increase in his cash income that Santos made the decision to build a new home. The income generated by the more effective marketing of the crop through this co-operative organisation also stimulated its members to seek credit to buy fertilizers to try and maintain (or even improve) their yields instead of resorting to the traditional fallowing practice.

It is important to note that there is no tradition in the village, nor apparently in most of Mexico, of the use of compost or manure, as such. Some manuring occurs naturally when animals graze the arable land in the dry season and when it is left fallow. Vegetable matter turned in during ploughing helps to increase the fertility of the soil. However, there is no systematic spreading of plant, animal, or human wastes onto the land. Even the accumulations of

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1. See the following section on co-operation.

vegetable and animal wastes in the house plots appear to be unused. This is certainly an area in which changes in the use of these resources could lead to a significant increase in yield without additional capital inputs.[1] There is also no tradition of a practice that has proved beneficial elsewhere, crop rotation. Neither the national authorities nor the various regional agricultural training and research institutes appear to pay any serious attention to the improvement of soil-husbandry practices.

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1. The lack of wheeled vehicles and the distance of the house sites from the milpas act as a disincentive to the spreading of the abono de Corral. See Meij (1960) pp.133-138.

CULTIVATION

Cultivation is almost entirely by hand aided by bullock teams, yuntas. One villager uses horses for pulling the plough. They are cheaper but have less draught (pulling force) than the much heavier bullocks. The farmer with the largest landholding uses a tractor, capable of pulling a three furrow plough, very successfully, for land preparation and crop transportation. At the time of the study he did not own a full range of implements for the machine and, in particular, seeding was still done by hand, not by drill. Many villagers aspire to be owners of a tractor although few could use one effectively on their lands alone.

Little work in the fields is carried out on the land in the dry months after the harvest has been gathered. Activity picks up in late May, about two weeks before the onset of the rains, when the bullocks are harnessed and trained for the coming season's work. The local bullock yoke is made from a single piece of carved wood which is strapped to the animals horns. This type of yoke has undergone little change in design since it was introduced, with draught animals,[1] by the Spaniards.

The essence of the training is for the yuntero, driver, to dominate, dominar, the animals. Bullocks do not appear to work as willingly as horses and are

1. Innovation in the design of yokes has been made in various parts of the world in order to improve both the draught power and endurance of the animals. They have not been transmitted or disseminated in Mexico. See for example FAO (1966).

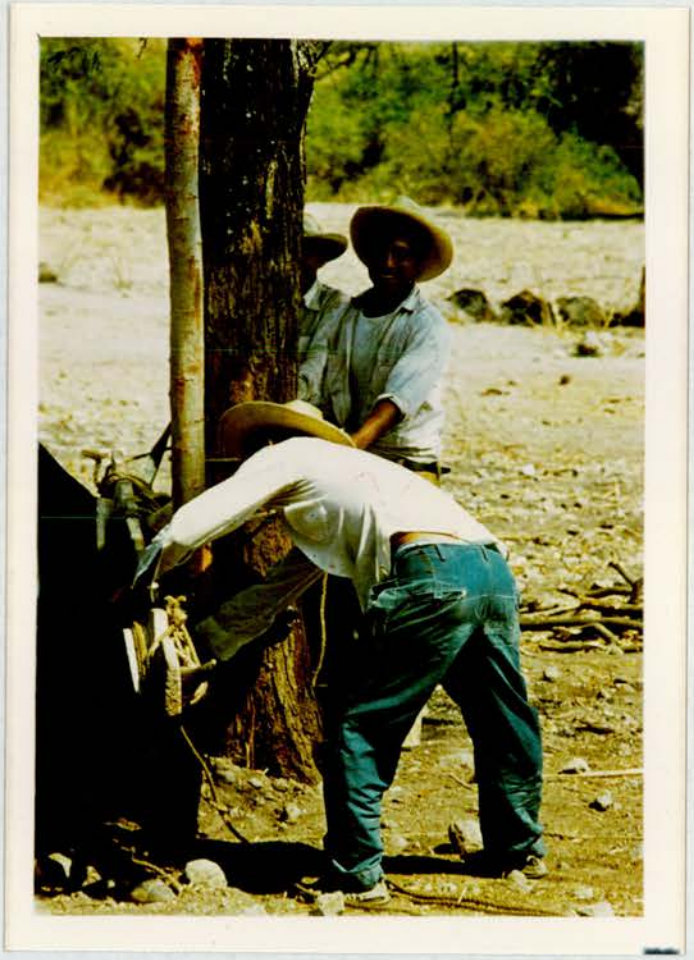

Plate 5. Fitting the yoke on the yunta

Plate 6. Yunta at work

coaxed and prompted by the use of a pointed stick until they respect the yuntero sufficiently to obey his instructions.

When the team is first harnessed it may take as many as ten men to strap them to the yoke. After training this task can be done by two.[1] If the animals are mis-matched in temperament the stronger will bully the weaker by frequently pulling it to the ground. Sometimes an animal's neck may be broken. New teams may have to be changed around until the animals are properly matched.

When the yunta is able to walk in a straight line, and the animals have developed a degree of respect for each other and the yuntero, it is attached to a light load such as the cut branch of a tree. Later the animals are taken to drag firewood to the village. After about a week, the yunta is attached to the plough and trained to produce an evenly ploughed field. To do this it must respond to instructions to walk closer to, or further away from, the furrow being followed. This is crucial to subsequent cultivation as damage may result when the plough is being used to cut out weeds from the rows of plants if it is not kept away from the stems.

The old metal-tipped wooden plough, which is still used in many parts of Mexico, has been completely replaced in Ahuehuetzingo by the steel mouldboard plough, bolted to a wooden shaft some three metres long.[2]

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1. See Plate 5.
2. See Plate 6.

This plough may be adjusted to give different depths of cut.

Fencing is erected to protect the fields from wandering animals. This may be done each year or be left in situ until the land is left fallow again. Most fields are fenced separately using barbed wire or wooden stakes set closely together and bound. Where friends or members of the same family farm adjacent plots they may simply surround combined plots to save both time, materials, and money. Gates are simply made by leaving a gap in the fencing which is filled by bundles of spine-covered branches. Gulleys are fenced by using spine-covered branches tied to a rope spanning the fence ends. This permits the passage of flash flood waters and the associated debris without causing any build-up which could tear the fence away.

As soon as the rains start in earnest ploughing commences.[1] Fallow land is first cleared of scrub by cutting and burning. Some of the large rocks and stones will be removed at the same time. About five tareas a day can be cleared by a man working alone. Ploughing, with a yunta and steel mouldboard plough, is done at a rate of about three tareas a day. The ploughs have a depth of cut of 10-15 centimetres and have exchangeable tips, one for ploughing where a deep cut is required and another shallow one for weeding. After

1. This practice differs from Huercorio - Belshaw (1967) p.57 - where planting commences in advance of the rains. This will give better yields if the rain continues without break after planting. If it is intermittent the young plants suffer from water stress and may die.

ploughing the ground is left for a few days for the exposed weeds and those turned under to die.

Maíz may be planted at any time in the four weeks after the onset of the rains without yields being affected. Again the yunta is used to facilitate this operation with the direction of the cut being at right angles to the original ploughing and generally following the contour line. The plough is taken up and down the same furrow throwing the soil up on both sides forming a shallow trench. Seeds are dropped into the trench, often by the children of the yuntero. For maíz three seeds are dropped every 80-90 centimetres and covered by pulling the soil over them from the trench walls with bare feet. The rows are about the same distance apart. When maíz is intercropped with frijoles or other vegetables such as calabazas, pumpkins, they are inserted at irregular intervals, and around the field edges, after the main crop has been sown. A team of two men and the yunta can plant about four tareas a day.

The soil at this time is moist and at about body ($36^{\circ}C$) temperature. Germination is rapid and after about three weeks maíz plants are about 15 centimetres tall. Weeds also grow rapidly and the field requires its first weeding at this time to prevent the plants being swamped. This is the most arduous part of the agricultural cycle and is the limiting factor in the amount of land that can be planted using traditional

techniques. If the cultivator has two peones working with him he can weed about three tareas a day. If he has only one this drops to two or less.

From this time regular weeding is carried out over about two months. The parcela holder works a full six-day week. A typical daily round for Santos was as follows:

Rise at 5.30 a.m. to take the bullocks to eat and drink sufficient to sustain them through the day without making them lazy. Drive them on to the parcela and commence work at 7.30 a.m. Breakfast is brought to him in the fields whenever he does not have to return to start and run the village water pump.[1] Work continues through the morning until a midday meal is brought by his wife or a daughter. This meal is eaten slowly and a rest of between one and one and a half hours is taken. Work in the field continues until six in the evening, when the bullocks are taken to pasture and water and allowed to satiate their appetites. He returns at night for his evening meal at about 8 p.m. a very tired man.

The weeding is carried out by using the plough to turn the soil away from the rows by passing very closely to the plants going both up one side and back down the other side. The peones follow behind and,

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1. The writer having some experience of diesel engines was able sometimes to take over this daily duty. At times water was not pumped until the afternoon, or not at all, to the consternation of those without adequate storage facilities.

using short handled hoes, clean the remaining weeds from around each plant and pull the freshly-turned soil back around the stem. Each plant is treated in this way. If any have failed to germinate, fresh seeds are planted or plants transplanted from the thicker groups.

A second weeding is carried out in a similar way two to three weeks later.[1] The final weeding, again three weeks later, is much less arduous. By this time the plants are tall and strong enough to compete with a few weeds. It is sufficient to pass between the rows with a plough to turn under the weeds growing there. This final weeding may be done by one man and his yunta at a rate of about eight tareas a day. Subsequently some weeding may be carried out with a machete, but this is usually incidental to the cultivator inspecting his crop. By September the work load has eased and the first ripe ears are ready for roasting over the fire. The men may now only work in the mornings and spend the afternoons sitting and chatting in the fields, eating the elotes.

The main crop of maíz is harvested in December. The ears of corn are stripped from the plants and the protective leaves removed by hand. They are loaded

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1. The Tarascan method of weeding is somewhat different and possibly more effective in terms of the demands for time and labour. The seeds are planted at regular intervals, as it were, at the intersections of a rectangular grid. This enables the first weeding to be carried out in one direction and the second at right angles. This eliminates some of the hard work. See Belshaw (1967) p.67.

into sacks, each containing about one carga, roped to the saddle of a donkey or a horse, and carried back to the house site. This work is usually done by the family, without outside help; one person is able to harvest about two tareas a day. The stalks are left standing in the fields and are gathered for fodder as and when required.

After being sun-dried in the house plot either on the roof of a flat-roofed building or on a fenced-off piece of hardened earth, the harvest is stored in the sacks or in wicker, wooden or cement containers.[1] The grain is stored on the ears as the tight packing of the grain on the ear is believed to reduce infestation by insects.[2] Only that required for immediate use or for market is shelled. Shelling is carried out with the aid of an elotero, a disc of corn cobs bound together with their ends forming a rough surface. This very effectively tears the corn from the ears when they are rubbed on it.

Other crops have different cultivation cycles. Frijoles, planted at the same time as the maíz, start producing in early September, and yield two or three pickings before the end of their growing season in mid-October. Melons and tomatoes are planted late in

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1. The beehive shaped Cuescomatl grain store is not used in Ahuehuetzingo although it can still be seen in nearby Xoxocotla.
2. This concurrs with Lewis' findings - Lewis (1951) p.141 although the report by the Tropical Products Institute on losses in stored maíz in Zambia (G109) showed that in that location storing maíz on the cob was inferior to being shelled. However, they did confirm that the tighter the grain was packed on the cob the less the infestation.

August after the most intense work on the main crop has been completed. These begin to give fruit in October and continue until the rains cease. The market for these perishable crops suffers from violent fluctuations. In glut years producers receive relatively low returns on their investments. Sorghum, as mentioned previously, is planted as a standby crop as an insurance against poor rains, and cultivated similarly to maíz. Its seed and fibre are also marketable.

The other major crop, cacahuates, is planted in a similar way to maíz and at the same time of the year. Only two seeds are dropped each pace instead of the three for maíz. These plants do not grow above the weeds and so they require a third intensive weeding, after which they cover most of the ground. The nuts are formed underground and so after the final weeding the plants are not disturbed until harvesting. This extra weeding means thatmost cultivators of cacahuates do not grow other late planting cash crops as they have insufficient time for preparation of the land.

Both cacahuates and frijoles have some ability to 'fix' nitrogen and so both these crops flourish in soils too poor in nitrates for maíz. Cacahuates are not suitable for intercropping with maíz, because of their ground 'hugging' growth, and at present they are grown only on ground considered unsuitable for maíz. If the area under cultivation increases, as appears likely because of the increased and secure

economic returns resulting from the establishment of the co-operative, they could be cultivated successfully in rotation with maíz. In this way the need for fertilizer inputs, other than phosphates, would be reduced.[1]

Cacahuates have a significantly higher value per unit weight than maíz and so, once harvesting has commenced in late October, the cultivators wish to gather the crop in and to sell it as rapidly as possible to reduce the risk of theft. This involves quite a high capital involvement for the hire of peones to harvest the crop at a time when money is short. It is this untimely cash requirement that prompted the formation of a co-operative in 1971.

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1. Webster (1966) pp.183-201.

CO-OPERATION

Co-operation in economic activities is normally limited to the family, both nuclear and extended. There is a great reluctance to risk the loss of control over any aspect of matters relating to the welfare of the family. This may be seen in the reluctance to enter into any joint ventures, such as joint cultivation or capital involvement. Harvesting is undertaken by the family or jornaleros. Exchange labour between friends is rare, although each may employ the other for cash wages.[1] Similarly, it is only with borrowed capital that groups will get together to purchase fertilizers; in this way most of the risk is transferred to the lender.

In dealings with a local moneylender, whether he be an outside middleman or wealthy villager, property may well be at risk and so money is never borrowed for fertilizer or anything less than a dire necessity. 'Official Banks', such as the Banco Ejidal, do not require the provision of securities and so do not involve the same risk to the borrower (consequently the bank suffers from a high rate of unserviced debts and now requires the borrower to take out an insurance through the bank to guarantee repayment). The record

1. A statutory minimum wage is stipulated by the Mexican government; this is never paid in the village. In 1974 it stood at 29 pesos a day and the village rate was 20 pesos. This village rate is arrived at without any overt negotiation and appears to be based on a 'known' norm. Young boys will be employed for less depending on their strength and stamina.

of bad debts which the banks have suffered in the past has had the effect of discouraging the private banks from lending money to all except the largest landowners. In an attempt to improve the chances of prompt repayment the 'Official Banks' will now only lend money to credit unions, or co-operatives, not to individuals.

In the past one economic activity has involved co-operative labour, for the cultivation of the school parcela. The school was alloted two parcelas under the agrarian reform programme. The sale of the produce from these was intended to provide partial support for the school. It was also envisaged that the enlightened cultivation techniques practised under the direction of the teacher, would raise standards generally.[1] This has not happened. The teachers, both of whom live outside the village, and the villagers have shown little interest in cultivating the school land. As a result one of the parcelas is rented to a villager with the income going to the school. The other has remained uncultivated, and because of its abandonment, 'Don Jośe', the restauranteur, petitioned the municipal council, in 1974, to allow him to use this parcela. This so incensed the village that they decided that the land should be planted, this being the most effective way to block the claim. Village concern was so deep that over seventy men, with thirty yuntas, came on the allotted day to clear and plant the two hectare plot. The whole operation of clearing, ploughing, and planting

1. Neuva Ley Federal de Reforma Agraria (1974) - Articulo 102.

was completed in a single day. Only in the face of this perceived external threat did the men decide to delay working their own fields and to cultivate this land collectively.

Another project, connected with village prestige, that received support readily was the construction of a new Ayudantía Municipál, to replace the old, adobe, building. The materials were provided by the Municipal Council on condition that all mano de obra would be provided by the villagers. The building was completed over the winter months, when the work did not compete with any money-making activities, by teams of villagers working on a rough rota basis. The project received ready support as it was viewed as one which would benefit the whole village as it represented modernity and a confidence in the future of the village. Some men were less enthusiastic than others, but all helped to some extent.

At times ideas are mooted for other co-operative projects, such as the building of small flash-flood dams in the gullies to reduce erosion. Such ideas rarely lead to any action. Amongst the villagers there is the widespread suspicion that even if a scheme does not involve any loss for an individual he may not derive an equal benefit. If this is so then let the major beneficiaries carry out the scheme even though some who do not contribute will gain something. It is a major block to action.

These barriers of suspicion are usually absent in

relations between members of the same family. Children are expected to assist as a filial duty whilst they remain a part of the nuclear family. Exchange of labour is also frequent between members of the extended family. Old men often help their adult sons in the fields, and women get together to shell each others' frijoles whilst gossiping.

The most certain and productive of these relationships is between brothers who may, and normally do, help each other as a matter of course throughout their lives.

Just before the growing season, Santos received a severe machete cut on the index finger of his right hand and was unable to use it. It was impossible for him to continue to train his bullocks. His brother, who had his own team to train, stepped in and helped him by walking the two teams alternately and even helping at the start of the ploughing to ease the strain.

This apparently contradictory attitude to co-operation within and outwith the family reflects the prevailing view on security and identity. Within the family, ties are unbreakable in normal circumstances. So, although each nuclear family is a separate economic unit in its day-to-day affairs, there is frequently mutual support, in the case of need, in the wider bounds of the extended family. Outsiders cannot establish the same bonds and are suspected of wishing to gain at the expense of others when they offer to co-operate. This reluctance to co-operate has been observed in other studies. Fromm and Maccoby point to both the fear of

being cheated, and the dislike that villagers have of taking or giving orders in a situation of supposed equality.[1] The hiring of a peon does not raise these problems as he is paid cash for doing a specific job. Foster[2] developed the concept of the 'limited good' which views the village as having a fixed quantity of assets. Thus, if one person is to benefit it must be at the expense of others.[3]

Fiestas have in the past been used by villagers to re-distribute wealth. The Mayordomos who organise the fiestas normally incur considerable expense, but in recompense their status is elevated. As villages enter more into a wider economy, the concept of 'limited wealth' breaks down and so the acquisition and retention of wealth in itself is no longer strongly sanctioned, so a man may maintain or improve his prestige without necessarily dissipating his wealth. Fiestas then become less lavish, with the wealthier villagers being unwilling to invest large sums on them.[4] In Ahuehuetzingo it is becoming increasingly difficult to find Mayordomos for the two annual fiestas. Most of the money for them now comes from donations by each family of between 20 and 40 pesos for each fiesta. No longer do the richer families, or the Mayordomos, pay out large sums.

The concept of the 'limited good' still has some bearing on attitudes, but there are further signs that a more dynamic concept of village assets and wealth is

1. Fromm (1970) pp.208-209. Belshaw (1967) p.24.
2. Foster (1967) pp.133-136.
3. Thomsen (1971) pp.276-277.
4. Fromm (1970) pp.134-135.

becoming accepted as outside contacts develop and expectations rise.

In 1971, some three years before this study, the co-operative venture was started to improve the returns from the peanut harvest. The prompter of this innovation was a man from the nearby village of Xoxocotla. He was known as the Abogado, the lawyer, as he earned his living from representing the villagers of the area in any confrontations with the authorities. Although he had no formal qualifications he had had a secondary education and was well read in the law as it related to rural problems. He grew a small amount of cacahuates, about five tareas, and thought that the return that he and other farmers got was inadequate.

Based on the respect he had locally, the Abogado managed to get about 80 cultivators from five villages to form a co-operative with the promise that he would use his city contacts to try and get a loan. This loan was not intended to change the cultivation techniques but to finance the harvesting and purchase of the crop. The money was needed because, being a high value crop, it must be harvested quickly so as to preclude pilfering. The crop ripens in October, before the other crops are ready, at a time when the available money is being used to purchase food, which rises in price at this time. To hire the peones necessary to bring in the crop quickly money was previously obtained from middlemen, coyotes, who lent money conditional on the crop being sold to them at prices

they determined. These were generally lower than the open market price and, as *cacahuates* are purely a cash crop and not the marginal sale of a surplus, the villagers considered that they were being cheated.

The development of what was initially a credit union, then, fits within the concept of the 'limited good' as the benefits were seen to be obtainable by retaining the profits previously taken by the *coyotes*.

It is significant that the co-operative did not involve any of its members in exchange of labour, and that the members were not prepared to permit their crop to be taken from their house plots without immediate payment. This meant that the loan needed was significantly larger than it otherwise would have been. Once again possible economic benefit was sacrificed for the sake of security.

Some difficulty was encountered in obtaining the credit. However, in October 1972, a private bank was eventually found which granted a three month loan of 150,000 pesos. The money was divided between the five villages to finance both the picking of the crop and the purchase of it. The co-operative was then able to arrange its sale in bulk direct to city-based buyers at a price well above that paid locally. The co-operative paid 120 pesos for a *carga* compared to the 100 pesos obtained from middlemen. Some surplus funds were used to purchase the harvest of non-members at a price only a little below that paid to members, but above that offered by the *coyotes*.

The scheme worked well in four of the five villages, but the fifth refused to repay the money when it became due at the end of December 1972. It was only after an armed confrontation, some months later, between the co-operative leaders and the renegade village leaders that they agreed to repay the money. Because of their irresponsibility the village's members were expelled from the union. The accountant employed to handle the transactions and the society's funds was also suspected of embezzling 15,000 pesos, but nothing was proven. These problems led to the failure of the co-operative to repay the loan in time or in full. This resulted in the bank's refusal to advance a further sum for the next harvest.

Without credit the following year, residual funds were used to buy the crop piecemeal and resell it in smaller quantities than in the previous year. The society obtained a shelling machine, on loan from a benefactor, which further raised the selling price of the crop. Even with its difficulties the co-operative paid its members 200 pesos a carga – 30 pesos above the local price. Minor processing of part of the crop was also undertaken by some of the socios in Xoxocotla. The nut confections they produced were sold at fiestas and in nearby towns.

These developments re-vitalised the society after its disappointing first year. In 1974 they sought a further loan not simply for the financing of the harvest but to purchase fertilizers in an attempt to increase

yields. Eventually, in July, 120,000 pesos was obtained from the same private bank that had supported them in their first year of operation. This loan was subject to the condition that the accumulated debt was carried over and added to the sum lent. This loan was more flexible, being lent at a rate of one per cent per month interest and re-payable any time within the following year.

Some approaches were made to the 'official' federally-run banks and to C.N.C. organisers, prior to obtaining the loan, to explore the possibilities of obtaining 'official' funding at lower interest rates than those obtainable commercially. The response was disappointing. It was considered by these bodies that an inter-village co-operative could not function. A loan would be 'considered' only if the co-operative split into four separate units and the rights of each cultivator to his land established. Both these conditions were impossible to meet. The strength of the venture lay in the fact that it had enough members to deal directly with Mexico City based buyers, not local middlemen. Also in terms of strict legality many of the members had no title for the land they were using. Santos and his brother both farmed their father's ejidal land which was within the law, but their father should have been the co-operative member, not his sons, as this implied a splitting up of the ejidal grant which is illegal. Others had doubtful tenureship of the land they farmed. To comply with

the requirements of the 'official' banks would have led to the break-up of the co-operative. Fausto, one of the co-operative committee members in Ahuehuetzingo, also expressed the fear that if they had accepted such a loan the bank would have wished to control their activities.[1]

The loan was obtained too late for fertilizers to be used at the time of planting. The socios decided to apply them instead at the time of the final cultivation, but, in the event, the rains were light and they decided that there was a danger of the plants being burnt up if they were applied at that stage.

This innovation, away from any fatalistic 'limited good' attitude, also led to greater speculation on other possible developments. One proposal, for the near future, was that they should purchase improved seeds which in conjunction with fertilizers could be expected to increase yields by 50% or more.[2] Other ideas included the purchase of a tractor for each of the villages and the possibility of starting a co-operative shop. This enthusiasm and optimism amongst the socios was infectious and attracted more members. This optimism, although the co-operative had suffered financial and organisational set-backs, led to a rush of new homes being built by the socios, including Santos.

1. This is a very real fear as these banks normally wish to purchase the seed and fertilizers, and sell the crop. The loans are also conditional on the recipients accepting the technical advice given by the banks. For further discussion on this point see the following chapter.
2. Ruthenberg (1976) p.154 - reports that improved seeds also reduce the annual variations in yields which increased the probability of fertilizer application paying off.

If this experiment proved itself viable in the long term then its extension into other areas of economic activity seemed likely. It should be emphasised, however, that the co-operative operated in much the same manner as did the original middlemen, with each cultivator being responsible for his own crop and being paid cash when it was removed for processing in Xoxocotla. At no stage had there been any radical divergence from the individualistic pattern of production or the involvement of personal funds in a joint venture. The co-operative had adapted naturally and complied to a large extent *with* the existing social norms, and as these changed it changed too.

IRRIGATION

In common with most rural Mexicans the villagers consider irrigation to be of paramount importance. At a meeting called, in the summer of 1974, by a C.N.C.[1] representative, the men of the village were asked what help they most needed from the government. Their response was to ask for the provision of irrigation and the installation of a telephone.

The only constraint in providing a telephone is financial; the cost of laying the lines to connect with those running along the main road could not be recouped by the revenue gained from the use of the telephone and so the village is unlikely to be connected for some time.

Irrigation on a wide scale, however, poses a much more difficult problem. The village lands lie above the level of the gravity-fed irrigation canals providing water for the sugar fields of the adjacent ejidos of San José Vista Hermosa and Puente de Ixtla. The terrain is also hilly and even if pumped irrigation were provided most of the village lands would require extensive terracing. In short, only by making large capital and labour investments could a large part of the arable land be brought under irrigation.

Small scale schemes are more feasible and a 20 metre high earth dam built by the Secretaria de Recursos Hidraulicos has provided irrigation for some 35 hectares. The dam was finished in 1963 as part of a programme to

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1. Confederación Nacionál de Campesinos.

bring irrigation to communities unable to benefit from the national and regional large-scale schemes. The cost of its construction was four million pesos and was borne by the federal budget and, as it was part of a programme instigated for social reasons,[1] would not be expected to show an economic return.

The dam was originally intended to provide water for a much greater area than it now serves. A 70kw diesel pump was installed capable of raising 100 litres per second, sufficient water to irrigate in excess of 250 hectares.[2] 200 metres of 15 centimetres diameter piping were laid to carry the water to the side of the main road where it could be ducted to the ejidal land on both sides of the road. As a further part of this scheme the Secretaria de Recursos Hidraulicos planted a two-hectare citrus orchard to provide a cash crop and presumably to stimulate innovation in cultivation practice away from subsistence crops.

A gravity-fed channel was constructed to provide water for lands further down the valley. This was never completed when it was seen that the dam never filled sufficiently to irrigate more land. Most years since it has been in operation the dam has never more than half filled and runs out of water before the end of the dry season. In the year of this study the rains

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1. It is also expedient politically to spend and be seen to spend money in aid of the campesinos - 'mejarar su condicionnes'. The fact that the money is spent perhaps has more significance politically than its effectiveness in raising the incomes of the campesinos.
2. The pump was a six cylinder Stationary Fiat diesel engine powering a centrifugal pump.

were exceptionally light and even at the end of the rainy season the water level had barely risen above the base of the dam.

The citrus orchard has never yielded fruit and although most trees are still alive, there is little likelihood of the scheme ever being re-started. The project failed for a combination of reasons. The group of ejiditarios who were to operate the venture received insufficient support, both technical and financial, and were even unable to buy sufficient fuel for the pump. Being so large the pump is too costly to run to water such a very small plot. Subsequent water shortages and maintenence costs have effectively prohibited the continuance of the scheme, and without winter irrigation the fruit bushes barely survive. Even so, enthusiasm was not completely dampened and one of the original group approached the writer to see if there was any way the pump could be recomissioned.

The 35 hectares of gravity-fed land is a little more productive. Two canals supply water to fields as far as the terracerra leading from the village to the main road. These lands, although classified officially as communal lands,[1] have been held by individuals as far back as anyone in the village can remember. The land is then, 'de facto', private land, and there is little co-operation and, at times, competition between cultivators. This, coupled with the fact that no one has

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1. See Map 2.

been appointed or selected to control the dam outlet, has led to over-extraction of water.

When the dam was completed its control was handed over to the villagers. Although the cost of the project was considerable no training in the use and control of irrigation water was given to the potential users. Consequently, the first two winters' harvests were adversely affected as the users learnt to regulate the supply of water on the basis of trial and error.

Almost all the irrigated land in the locality is used for sugar cane or rice, both of which require flooding. The use by the villagers of similar techniques for maíz cultivation is very wasteful with much of the water running off into the stream; the use of syphon tubes is unknown. The villagers also irrigate more frequently than is strictly necessary, some eight or nine times in the growing season.[1] Such over-use of water not only, of itself, reduces yields but also leads to water shortage at the end of the growing season. The problem is further compounded by a scramble for water as the season nears its end as each cultivator tries to ensure that at least his crop gets adequate supplies.

The insecurity engendered by the likelihood that water will run short or fail before the end of the

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1. Agronomists with DAES (Desarollo Agropecuario Ejidal de Sinaloa), a state run promotion organisation in Sinaloa, reported that in similar conditions, for maiz, they recommended only five or six irrigations in a season.

season has inhibited innovation on this land. Experience dictates that the maíz planted is usually of the traditional varieties, resistant to drought, and, being indigenous, having the lowest seed price. The land remains largely unfertilized for a similar set of reasons.[1] The traditional varieties of maíz do not command the same market price as do hybrids, and so fertilizer costs are more difficult to recoup. These varieties, also, do not respond well to fertilizer and there is a risk of the plants 'burning up' if water should run short.

Even with these problems the irrigated land is useful to the village as it yields a harvest of maíz at a time when it would otherwise be in short supply and its price in the local markets would be high. If the supply of water could be secured, by fair allocation and control, its benefit to the cultivators would be significantly increased. This would open up the possibility of commercial cropping, using fertilizers, and leading to two cultivation cycles a year. The limitations have been realized by the municipal authorities, who are considering asking the government to expropriate the lands irrigated and place them under ejidal control in an attempt to distribute the lands more fairly amongst the villagers and rationalize the water usage.[2]

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1. Santos had decided to fertilize his irrigated land in the following season. See section on agriculture.
2. The Agrarian Reform Law does provide for this and the municipal president reported that he had approached DAAC to implement these provisions. Neuva Ley Federal de Reforma Agraria (1974) Articulo 71.

There have also been some small-scale independent schemes which have had a degree of success. One uses the water retained by a small brick dam set below, and fed from the leakage of, the large dam. It was constructed to provide a non-potable water supply for a restaurant on the main road. Some of the surplus is used by a village entrepreneur, who has installed a small petrol-driven pump to irrigate an orchard. His financial success is demonstrated by the fact that he is one of the two men in the village owning a truck. Another entrepreneur, acting without the approval of the village council, initiated an experiment in growing a mango tree which is irrigated by hand, using the domestic water supply. He hopes that, eventually, the tree's roots will go deep enough to enable it to flourish without watering.

Many other small schemes are feasible using the constantly flowing stream, swollen by the leakage from the dam, to irrigate small plots either by pumping or by gravity-fed channels from upstream, However, for the less independent villagers to divert water from the stream, which has traditionally been the source of water for the animals and people in the winter months, would require a significant change in attitude. If the practice of diverting this water were taken too far there would indeed be a threat to the well-being of those downstream.

The only other major possibility for extending the area served with irrigation would be the sinking of a well, and installation of a pump set. This may be

possible in the valley to the west of the village, which at present is used principally for growing cacahuates. This valley has a catchment area, over eight square kilometres, twice that feeding the dam. Added to this, the river draining the land had to break through the hills to the south and so there is likely to be a sizeable hard rock basin forming a subterranean reservoir. The water table in the nearby potable water well is about 80 metres below ground level and since being sunk it has never run dry. These factors would indicate that there is perhaps sufficient water in this valley for some pumped irrigation, but the capacity of the aquifers to support additional water extraction is not known. A project of this nature is, of course, beyond the present financial and technical resources of the village although the ejido owns a suitable power unit, brought in to irrigate the orchard, which would significantly reduce the initial cost. This land is used almost entirely for cash crops and so it is possible in the future, if the co-operative continues to improve the income from this land, that sufficient funds could be raised to finance such a well.

ANIMALS AND INVESTMENT

Animals are kept for food, for work, as pets and, simply, as an investment. The smaller animals around the home are primarily the responsibility of the wife. The turkeys, hens, and pigs are fed largely on domestic scraps. There is some trading of these animals between families and in the local market, but most get no further than the pot.

Their mortality rate is high, with diseases being readily transmitted as the animals scavenge freely throughout the village. Pigs, especially, are susceptible to intestinal diseases resulting from the eating of the faeces of all animals including humans. In the summer of 1974 one of Santos's three pigs collapsed and died within 24 hours from an unidentified disease. With disease among pigs being so common and readily transmitted, no family runs a herd of more than six pigs for fear that an epidemic may strike. The domestic fowl population suffers periodic decimation from viral diseases against which they could be immunised. Cattle are protected against the most virulent disease by single doses of vaccine supplied through a government-sponsored programme. Fowl, however, are not covered by the scheme and vaccine is only available from commercial suppliers in 50-dose lots. There is much talk, amongst a group of women, of buying a supply of vaccine but they are unwilling to attempt any co-operative venture without the backing of the men. The men, always reluctant to enter into co-operative financial

commitments, have not yet made any proposals concerning vaccine purchases.

These recurrent plagues have deterred people from keeping more than two or three hens. Señora Santos, who would like to vaccinate hers, recalled a time, in her youth, when hens were more numerous and were not subject to such continual losses. Increased contact, in recent years, with other villagers and the market are factors likely to encourage the transmission of disease, as chickens are both bought and sold outside the village. Egg production is consequently low and eggs cost 1.2 pesos each in the village; this is nearly double the price of eggs in Mexico City, many of which are supplied by commercial egg production units in Morelos. Most eggs traded in the village are sold by shopkeepers who buy them in the local market in Puente de Ixtla, at a price of 13 pesos per kilo, and resell them singly at a substantial profit.

Some families raise goats and cattle which may provide the major source of their income. Goats are kept, in herds of about 100, by three villagers who do not have access to much land and the goats provide almost their entire income. Not all the goats running with the herd belong to the herdsman, some belong to other villagers. He tends them for a fee. This customarily takes the form of ownership rights to half the kids born and the milk of the she-goat. Goats' milk not consumed by the goatherds family is either

Plate 7. Loaded donkey

sold in the village or made into cheese for the market. Cattle are kept only by the richer families and represents the principal form of investment of their wealth. These are the most valuable animals in the community and have to be guarded constantly. For this reason few families own any cattle.

The richest family in the village runs a herd of 150 animals; their capital investment increases with the natural growth of the herd. Income is gained both from the sale of animals on the hoof, in the local market, and the sale of butchered meat in the village. A considerable additional income is derived from the renting-out of bullocks in the cultivation season. A team of bullocks may be hired for the whole season, with the renter taking care and bearing the full responsibility for them, for eight cargas of maíz.

The ubiquitous beast of burden is the donkey. All but a very few families own at least one. The old job of the arriero with his string of burros is gone, replaced by the truck, but around the village the donkey remains invaluable. Fitted with a carved wooden saddle it is capable of carrying virtually anything that needs to be transported: adobe bricks, a carga of maíz, or its owner.[1] Used constantly, they are kept in the house plot. In the dry winter months donkeys are fed on maíz stalks and leaves, and taken to browse in the scrub land. In the summer growing season they feed, wherever they are, on what is available.

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1. See Plate 7.

Horses are the least-used village animals, but are often bought as a secure investment. When worked they perform a similar role to that of the donkey and, using the same saddle, are capable of carrying greater loads more swiftly; but they require both more and better quality food. They are branded as foals and are allowed to roam in the hills to the South of the village. As with cattle, the investment grows as the herd grows and may be readily realized by sale should the need arise.

This pattern of investment in livestock is found in all areas in Mexico where there is surplus pasture. It is a very sound practice in tranquil times but in times of civil strife herds have been taken by warring groups as loot, for food and to exchange for arms. This caused some doubt as to the security of this form of investment immediately after the Revolution but, as the peace became secure, confidence returned.[1] With the continuing inflation of the peso, and the relatively low interest rates paid by banks, animals remain one of the most secure investments for the campesino.

Santos has been married and had a separate household for some twenty years during which time he has slowly acquired assets. Though he owns no land of his own his main source of livelihood is through the cultivation of the ejidal and private land held by his father. With his surplus he has bought stock and in 1974 he owned two mares, both with foals, six goats,

1. Lewis (1951) p.158.

two donkeys, with two foals, two pigs and some hens and turkeys.

His pigs and fowl are raised for family consumption. The goats, cared for by one of the goat herdsmen, provide a source of cash income. In the previous year three kids had been born and he had sold one of the goats in the market in Puente de Ixtla. A fully-grown goat may fetch up to 350 pesos. He had bought one donkey and foal from a drunkard, for the very low price of 200 pesos. He was hoping to be able to resell the donkey for 500 pesos after it had been fed back to health. His horses have never been broken-in and are in the hills. The first, bought nine years previously, for 200 pesos was worth 1000 pesos at 1974 prices. It had also produced one foal. He thought he might break-in one of the animals for the 1975 season so as to permit him to visit his fields more easily; but it was of no great concern to him. In short, the animals are his savings. He has a relatively small amount of cash secreted in his house for normal expenses of living, but it would be the sale of his livestock which would tide his family over hard times.

For the future he hopes to own land but, whilst he still has access to sufficient for his needs, he prefers to keep his assets in a more liquid form. His more immediate aim was to finish his house and, if his cacahuate crop came up to his expectations, he intended in the spring of 1975 to sell one of his horses to raise sufficient capital to purchase the roofing

materials.

It was a sign of his growing confidence in the future that he was considering reducing his available reserves to enable his family to move out of their jacál. Up to 1974 he had built the house up slowly without drawing on his savings.

MARKET CONNECTIONS

Road connections to the local and national markets are very good. The main Acapulco - Mexico City road passes within two kilometres of the village. The principal difficulty for most villagers is access to these markets; only two families have motorized transport. Those without use pack animals for carrying goods around the village and occasionally to market.[1] There is, however, a reluctance to use animals for carrying goods to market as it reflects on the status of the individual, and so wherever possible a lorry is hired; the goods are sold to middlemen with their own transport, or, if small enough, commodities are taken to the local market by bus.

Buses run regularly on the main road and those items which may be carried are traded readily. Puente de Ixtla holds a market every Sunday and most villagers attend - for social reasons as much as for business ones. The housewife goes to purchase the Sunday meat and the few items she may need for the week such as chiles, potatoes and, perhaps, maíz and beans at the end of the dry season. The men go to 'talk shop', possibly to arrange the sale of a goat or pig, and, often, to get drunk. The village shopkeepers go to their suppliers in Puente de Ixtla, and elsewhere, more frequently to restock the items that make up their daily sales.

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1. Ox-carts are not used in Morelos, because in hilly terrain, such as Ahuehuetzingo, they are ineffective and on the wealthier irrigated plains they have been displaced by motorized transport.

The only major commodities brought into the village by commercial distributers are beer, soft drinks, and ice. Deliveries take place more or less daily. Other exceptional consumer items, such as television and radios, are purchased in Puente de Ixtla.

In the past the principal crops were all purchased by moneylenders and middlemen. This remains true for the melon and tomato crops. However, for the purchase of the cacahuate harvest the middlemen have been replaced almost completely by the co-operative. Middlemen are viewed universally in the village as the 'villains of the piece' and are known as the coyotes but, whilst short term capital and transport remain bottlenecks, they will continue to have an important function.

Market instability also has a bearing on the middleman's importance. The villager has very little information, apart from hearsay, on the current state of the local and national markets for his products. He is readily persuaded to accept cash advances in return for a fixed price agreement to sell to a particular buyer. This provides the security he lacks should he have to pay peones to bring in the harvest perhaps only to find that a glut has made his crop almost worthless. This is particularly true of melons and tomatoes which are perishable and whose price fluctuates drastically from month to month and season to season.

Maíz has also been largely purchased by middlemen as each farmer sells only his surplus and this is usually insufficient to warrant attempting to take it to market.

In 1974 Santos had almost two hectares under maíz which he anticipated would yield 30 cargas. All but four of these he intended to store for food.

CONASUPO[1] has been attempting in recent years to create a guaranteed minimum price for maíz but so far has failed. This failure is on various counts. The traditional varieties of maíz have coloured kernels which are not commercially acceptable, for cosmetic reasons, although the protein content is higher than in hybrid maizes. Unfortunately, the company did not provide transport for the harvest and the buying points were far removed from most villages. As a result the middlemen continued to act as intermediaries. Subsequently a greater number of purchasing points were set up and local granaries built in some villages with the materials provided by CONASUPO and built by villagers. This has improved the situation in those villages although Ahuehuetzingo is still without either. The nearest buying point for Ahuehuetzingo is Puente de Ixtla.

In 1974, the year of this study, access to hybrid seeds was made easier by the provision of seed for a promise of 5% of the harvest. Market links still remained inadequate and the scheme was not tied to fertilizer inputs and consequently only a few of the villagers were prepared to take part in the scheme.

The success of the cacahuate co-operative in

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1. Companía Nacionál de Subsidios Populares.

obtaining access to the national market, independently of the middlemen, augurs well for the future. The society is exploring future extensions of its activities. It is hoped that it will soon be able to transport its own crop to market, by hiring lorries initially. There is a gradual move by the villagers to exercise greater control over the marketing of all their products and the success of the co-operative may prompt other ventures. The desire of the government to increase the production of major agricultural crops, by providing inputs, is likely to lead to further economic benefits for the villagers. Such inputs, of seed, fertilizer and infrastructure, by increasing both the yield per hectare and the price per unit weight sold, as the guaranteed price penetrates to the village, should enable villagers to improve their conditions. The increase in crop price levels in the village would make present marginal practices, such as the use of improved seeds and fertilizers, much less so, to the potential benefit of the villagers and the national requirement for increased production.

FOOD

The basic diet consists of maíz, beans and chiles. Maíz is eaten almost exclusively as tortillas. These are prepared from a dough, masa, of whole maíz kernel flour, fat and water, formed into flat 'pancakes' and cooked on a dry metal or pottery hob, camál. Beans, frijoles, are cooked in water and served either whole in their own sauce or mashed to a thick paste. The chiles are eaten as they are or made into a salza, sauce, with onion and green tomatoes. With the addition of some foods of animal origin this diet contains virtually all the nutritional elements necessary for survival.

In hard times the diet may be reduced to little more than tortilla con sal, tortillas with salt alone, but there are few now in the village who are reduced to this level. In better times meat, fish, eggs, cheese and other vegetables may be incorporated into the diet. These may be bought in the village or in Puente de Ixtla. The bakery, which has been in existence in the village for nearly a decade, provides an alternative source of carbohydrate in the form of bread and cakes. The cakes are the more popular and are eaten as a luxury item.[1] Milk is only drunk in the village by the young children, never by the adults. The amount and quality of food varies from family to family and from season to season.

1. The eating of bread and cakes in rural Mexico is a relatively recent phenomenon and has been used by some social anthropologists as an indicator of acculturalisation rather than of changing wealth. See Lewis (1951) p.188. Since 1940 the National Census has included a question on the amount of bread eaten. Most families in the village, whether well-off or not, will purchase some bread and cakes, especially for the children.

Immediately post-harvest is the best time for all, with seasonal vegetables supplementing the plentiful maiz and frijoles. The leanest time comes in the few months before the early harvest in August, when the work is the hardest and the food the scarceist.

At this time of the year many families' food stocks run short and they are forced to pay the high price asked in the shops. In 1974 the price of frijoles in Puente de Ixtla rose from the winter time price of seven pesos per kilogramme to a level of 15 pesos in August.

Meat is eaten whenever it can be afforded, but most families eat meat on no more than two or three days a week. A piece of meat will be bought in Puente de Ixtla on the Sunday and will be extended to the Monday, or Tuesday; each serving may amount to only a few grammes. When a family kills a chicken, or a bull is slaughtered in the village, there is a glut for a few days as the villagers have no way of keeping meat fresh.

Fish, taken from the lake formed by the dam or bought from fishermen, from the nearby Lake Tequesqistango, is sometimes eaten for a change but does not form a regular part of the diet. The stock of fish in the dammed stream is small because of the decimation of the fish when the water level drops at the end of the dry season. Only with more careful water conservation would the development of fish farming, or at least the maintenance of higher fish stocks, be possible.

Accompanying the main meal of the day is a hot

drink, either a herbal infusion or sweetened tea or coffee. The poorer families use coffee substitute bought in Puente de Ixtla, which is much cheaper than real coffee. At other times water is drunk; when food is taken to the fields water is carried in gourds. Drinking vessels are pottery cups, glasses, tin cans or half gourds.

Three meals a day are eaten. In the agricultural season, the rainy season, the midday meal is taken to the fields by one of the children. When the whole family can be assembled together at midday the main meal is taken then. If this is not possible the midday meal consists simply of tortillas filled with frijoles or potatoes, which may be readily carried. The main meal would then be taken in the evening.

The food eaten by Santos and his family in a sample week in September 1974 was as follows:[1]

SUNDAY	Breakfast	-	Tortillas, Frijoles, Salza
	Lunch	-	Tortillas, Caldío with beef, Frijoles
	Dinner	-	Tortillas, Frijoles, Cake, Tea.
MONDAY	Breakfast	-	Tortillas, Salza, Egg
	Lunch	-	Tortillas, Frijoles, Salza, Beef
	Dinner	-	Tortillas, Caldío with potato fritters, Tea
TUESDAY	Breakfast	-	Tortillas, Frijoles, Egg

1. Whilst in the village the writer ate with this family and gave them 50 pesos weekly towards the cost of the food. Although this was a small sum it permitted the purchase of items which would otherwise not have been bought by the family. In particular more eggs and cakes were eaten.

TUESDAY (Cont.)	Lunch	-	Tortillas, Frijoles, Salza, Cheese
	Dinner	-	Tortillas, Frijoles, Salza, Tea
WEDNESDAY	Breakfast	-	Tortillas, Frijoles, Salza
	Lunch	-	Tortillas, Frijoles, Salza, Tea
	Dinner	-	Tortillas, Frijoles, Cake, Tea
THURSDAY	Breakfast	-	Tortillas, Frijoles, Atole (rice starch drink)
	Lunch	-	Tortillas, Frijoles, Caldío with sausage
	Dinner	-	Tortillas, Frijoles, Cake, Coffee
FRIDAY	Breakfast	-	Tortillas, mashed Frijoles, Salza, Egg
	Lunch	-	Tortillas, Frijoles, Salza
	Dinner	-	Tortillas, Caldío with potato, Tea
SATURDAY	Breakfast	-	Tortillas, Salza, Egg
	Lunch	-	Tortillas, Frijoles, Salza
	Dinner	-	Tortillas, Frijoles, Salza, Cake, Coffee

At meal times it is usual to first serve food to the men and elder male sons. Then the other children are fed. Finally the wife and eldest daughter take their food around the raised hearth, rather than at the table. Whenever guests are present they are given food first with the head of the household.

Food is considered of great importance in showing hospitality. An unexpected guest will invariably be invited to eat and the wife will be expected to serve a respectable meal. This may be simply achieved by embellishing the meal with an egg. If the immediately available food is considered too sparse the children will be sent scurrying to the shop for a tin of sardines

and soft drinks. This concern that guests should be well received extends to any non-family person no matter how regularly he joins the family at the meal table.[1]

Offence is likely to be caused if an invitation to a meal is refused. At fiestas in the region, where mole, meat in a thick brown sauce made from peanuts, cocoa, and chile, is served, people may eat three, four or even more, complete meals in an afternoon in their endeavour to accommodate a succession of hosts.

1. The writer suffered some embarassment in joining the Santos family for meals as he was given consistently more and better food than even Santos himself.

SECONDARY ECONOMIC ACTIVITIES

The seasonal nature of rainfed agriculture means that all the men, to a greater or lesser extent, are able to indulge in activities other than the cultivation of their land. In bad years some work in the sugar fields simply to maintain enough income to ensure their family's survival. None from the village do this sort of work regularly, or willingly, as it is very hard and not well paid.[1] Some, in the past, went to Cuernavaca or Mexico City looking for work. Few do so now as there is little work to be had there, as urban unemployment is high and increasing. When paid work has to be sought it is within the village whenever possible.

Now, only the young willingly seek employment elsewhere. They have no land of their own and wish to see more of the world. A village youngster who works as a waiter in Cuernavaca returns home for a visit every week and brings some of his wages to help support his family. Others, particularly those with some education, have moved permanently away from the village to the towns, where they may work as clerks or teachers. In the past, many who left to seek non-skilled work have returned to the village to marry and settle down- as did Santos, who worked for four years as a waiter in San Vista Hermosa.

Some employment is found in processing and marketing

1. Most of the seasonal labour force for the sugar co-operative centred around the sugar mill in Zacatepec comes from the mountains of Guerrero where economic conditions are much worse than in Ahuehuetzingo.

the village harvest. The two villagers with trucks rent them out to transport some of the harvest. They also use their unique position to enter into the role of middlemen, to a minor extent, buying and reselling some of the harvest. This is not done very extensively as it puts them in the position of the despised coyote.

When selling maíz outside the village it has to be stripped from the ears to reduce bulk, hence the transportation costs, and to increase its value. This work is done by the whole family, as is the shelling of the frijoles and de-husking of the seed cacahuates.

In the past cacahuates were sold in their husks as hand de-husking is very tedious and laborious. Three years ago the co-operative acquired a powered de-husking machine which is kept in Xoxocotla. With the introduction of this machine a large proportion of the crop is now taken for de-husking before being sold. This increases the weight unit price by over 50% with a weight reduction of about 30%[1] when the husks are removed. The husks at present are used only as fertilizer for the fields around Xoxocotla as the co-operative's lands are widely scattered, The co-operative has no transport of its own and so, at present, this has to be hired. The hiring charge is acceptable for the high valued crop, but there is some reluctance to pay for the distribution of the husks over all the co-operative land. As a consequence peanut husks are considered to be a troublesome waste product.

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1. Martin (1976) p.746.

When the de-husking machine is in operation during the harvest period it is used continuously both day and night. It is able to process about one tonne an hour and can handle the co-operative's entire production in about three weeks. It is used over a longer period as the co-operative buys the harvest of some cultivators who are not members. Secondary processing on a small scale is also undertaken in Xoxocotla. Some sugared peanut confections are made and are sold at three pesos for a hundred gramme bag. These are sold, by socios and their wives, in local towns and in Cuernavaca where demand is rising.

As the co-operative gains strength and production increases, the members in Ahuehuetzingo hope to purchase a de-husking machine for themselves. This will reduce transportation costs and permit them to use their own husks as fodder as well as simply as fertilizer.

There are a number of small shops selling food items and drinks, as well as a pool hall. The owners of these have some lands, which are either insufficient to support them, or (as in the case of two of the shops) the owners are widows who, until their children grow up, are unable to till the land. In the village there is also an electrically-powered maíz mill which was purchased in 1970 by one of the wealthier families for 12,000 pesos. This has proved a very sound investment as the entire village has its maíz ground on this at a cost of twenty centavos a kilo. This gives an annual gross revenue of around 40,000 pesos.

Another secondary activity within the village is tailoring and dressmaking, which is carried out by two families who own treadle-driven sewing machines.

Most men possess skills in house building and some are able to make money by them. All men at some time have helped construct houses or other buildings. Because of its relatively short life, the jacál provides the most frequent constructional work. Jacáles are built by their owners with the help of family and friends. Some villagers benefit indirectly by gathering and selling the leaves used for thatching. Adobe buildings provide employment in the manufacture and sale of the bricks. The footings for such constructions are made from stone bonded with lime mortar and some men have developed sufficient skill in the construction of stone walls to be able to hire their labour out.

Building skills have developed and become more marketable as the demand for concrete and brick houses has increased. Job differentiation, division of labour, has developed with men concentrating on one aspect or another of construction. When governmental projects are undertaken in the village, such as the construction of the medical centre or the installation of new public taps, certain of the villagers will be employed for their skills. Specialised skills have been developed in other areas. Santos plumbs water taps into the village potable water supply, another villager is a painter and yet another a plasterer of adobe walls and, more recently, a layer of cement floors.

Skills are still based around relatively traditional activities and so far no-one has developed skills with electricity or machine maintenance; these needs are satisfied by craftsmen based in Puente de Ixtla. As the level of mechanisation increases, both in the home and in the fields, it is likely that some may develop these skills, but it is unlikely that they would remain in the village as earning prospects would be much better elsewhere.

VILLAGE ORGANISATION

Village affairs are controlled by the village council, of heads of households, which meets periodically in the Ayudantía Municipál. Officers are elected by the council members to deal with day-to-day organisation of village activities. The most important of these is the Ayudante Municipál, who is, in effect, the village president and who represents the village on the municipal council. He is also the co-ordinator and often the initiator of community activities. The other principal village officers include the treasurer, and the secretary.

The general assembly of the ejido, consisting of all the ejiditarios, exists in parallel with the village council. The two councils often meet simultaneously, without any real differentiation, as both are recognised as being concerned with village affairs. The Assemblea Generál of the ejido has its own officers, the principal one being the Comisario Ejidál. It also has its own secretary and treasurer. A Consejo de Vigilancia is selected and consists of those occupying second place in the voting for the three principal officers of the ejido. This has the sole function of ensuring that the ejido is run according to the national ejidal laws.[1] In practice in the village the Comisario Ejidal is the only body which takes an active role in ejidal affairs. In Ahuehuetzingo the ejidal parcelas are all farmed individually and there are no credit unions or

1. Nueva Ley Federál de Reforma Agraria - Capitulo Segundo.

co-operatives operating under the auspices of the Assemblea General of the ejido. Thus the ejido largely runs itself and most matters relating to it are dealt with at the village council meetings.

Meetings are traditionally held on Sunday nights with people being assembled by the ringing of the church bell. Some hundred villagers are eligible to attend but normally about forty do so. Only one woman regularly attended the meetings during the time that the writer was resident in the village. A few others are eligible, as heads of households because of their widows status, but women are 'not expected' to take an active part in village politics. The atmosphere at these meetings is relaxed and the sons of some of the men are allowed to attend in the company of their fathers. The writer, too, was permitted to sit in on all the meetings without generating any apparent concern or resentment.

Meetings are held usually to discuss specific issues although no formal agenda is ever presented. The meeting progresses in a somewhat haphazard manner. Subjects left aside are likely to be re-introduced later. The Ayudante, who chairs the meeting, attempts, with variable success, to limit the extent of deviation from the subject under discussion and discourages separate conversations.

A villager is very reluctant to stand up and speak strongly on any topic, especially if he feels his views may not be wholly acceptable to the rest. Open conflict is rare. Agreement is shown volubly; disagreement

is manifested by lack of enthusiasm. Rarely, votes are taken, but they are normally limited to elections, when voting is unavoidable. Village protocol expects that decisions are reached by consensus and, ideally, unanimously. At the meetings attended by the writer, only one villager voiced opinions strongly and emotionally. A veteran of the revolution, he espoused the ideals for which the Zapatistas had fought and was violently opposed to any governmental meddling in village matters, especially when it concerned expropriation of village lands. The reaction of the others to his impassioned outbursts was always one of embarrassed silence.[1]

It is the duty of the village council to organise communal actions. The new Ayudantia Municipal was built by labour organised, by the village council, on a rough rota system. This new project enjoyed wide support within the village and finding labour was never a problem. On the other hand, little support had been given in the past for plans for the cultivation of the school parcela granted under the Agrarian Reform Law to provide funds for the school. This required time to be given up on behalf of the school at the time of the year when each preferred to cultivate his own land. In the year of this study, however, the external threat posed to the village, by Don José wishing to claim the land, galvanised the villagers into common defensive action. The parcela was planted with virtually the whole village lending support. This emphasises the point that without

1. These observations are paralleled by Fromm(1970) pp.63-66

consensus there is little likelihood of action being taken on an issue.

In 1974 there was an incident which led to the unusual step of sanctions being taken against offending members of the village. The diesel pump which supplies domestic water is financed by contributions from both those with their own taps and those using the public ones. Those with their own water supply should pay 120 pesos a year, those without, 60 pesos. In that year many failed to make their payments. This resulted from a combination of factors which included the reluctance of people to part with money and the reluctance of the villager whose job it was to ask for payment. The collector's job is not a popular one; though he had been elected to sit as the treasurer of the water supply fund when the pump had been installed seven years earlier he had not been able to pass the job on to anyone else. The situation came to a head in the summer when finally there was insufficient money to buy fuel, let alone maintain the pump or pay the operator. A meeting was held and the treasurer was instructed to make a list of the defaulters. This did not satisfy the operator who wanted to further mortificarles, humiliate them, by refusing to run the pump until some money was forthcoming. This rather drastic action resolved the problem at least temporarily, with sufficient funds being collected to run the pump for a few more months.

There is no history of any systematic corruption in the village, as the office bearers are not in a position

to gain financially from the power of their positions, and most office holders refuse a second term of office. Each office entails a considerable amount of work with the only reward being the possibility of enhanced prestige. Many villages suffer from continuismo, that is men staying in the same office term after term because of the benefits it brings. In Ahuehuetzingo the Comisario Ejidal, Fabian, was the only officer in recent years who had remained for a second term of office without stepping down for another. As Santos, the retiring Ayudante Municipal, put it, he did not want to accept a second term because he had to continually keep pushing everybody to work in unison for the sake of the common good. He also complained of the time he had lost in having to attend meetings every Saturday in Puente de Ixtla and by the fact that he had to stop work to receive any official visitors to the village. He was afraid also that no one would accept the office and he would be obliged to continue.

In the event a new Ayudante was found. In the round of elections one of the young men of the village was elected the secretario, secretary, but he later reconsidered and withdrew fearing that he was too young to take on such responsibilities even though everyone tried to persuade him that he would do a good job. Most of the posts were filled by a single candidate rather than by election, partially through people's reluctance to stand because of the work involved and partially because of the fact that competitive elections have to

have losers; as with other decision making in the village, consensus is preferable to confrontation.

The political system as it functions in the village may not be well adapted to the promotion of change, but it was the clear advantage of minimising conflict and so maintaining social stability. The villagers retain a strong sense of identity with the village and they are immediately united in the face of an external threat.

THE VILLAGE AND THE 'OUTSIDE'

Villagers are normally deferential to visiting *oficios*. At one level this is merely the politeness which would be shown to any visitor, whilst at another it is an act of deliberate caution; if the visitor is flattered it is hoped that he will deal sympathetically with the village. It is always best, therefore, to overestimate the importance of the visitor than to risk causing offence.

Experience over many centuries has taught villagers that they have little influence on the 'world' outside the village boundaries. Even within the boundaries the extent to which the villagers may control their own destinies depends to a great extent upon the whims of those exerting power at municipal, state, and national level. The experience of the revolution and the idea of *Zapatismo* in general re-kindled villagers' aspirations to control their own communities. It also taught them that power ultimately returns to the towns and cities.[1] As a consequence, a degree of fatalism is discernable in the way in which villagers view visiting *politicos* or *oficios*.

This relative lack of power dominates all dealings which the villagers have with all outside officials. If a scheme is proposed to 'improve' the village the normal response is one of grateful acceptance, as any criticism of the project might lead to its abandonment. In the

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1. See Womack (1967) in which the inevitability of the transfer of power away from the *campesinos* after the *Zapatista* era is catalogued.

past they have had little opportunity to contribute in the planning of projects in the village. It is to the credit of the Partido Revolucionario Institucional, the governing party, which, under different titles since the revolution, has promoted many projects for village development. However, the attitude of the donors and their agents varies between benevolent paternalism and absolute indifference.

When projects are undertaken by the federal government and its departments, they are usually initiated and controlled from outside the village and are financed as part of national programmes.

In Ahuehuetzingo the first school was built in the 1930's under the national plan to bring the benefits of a secular education to the campesino. The original school building was replaced in 1967 with a new one to cope with the increased number of pupils. It has undoubtedly had a marked effect on the village, but its potential as a generator of new skills and attitudes has never been realized because the school and its teachers have never become fully integrated with the community. Perhaps the most important 'national political' fact is that a school has been provided. That the education received by the pupils does not reflect the needs of the villagers is only of secondary importance. The villagers have no opportunity to contribute to the curriculum, which is conceived and defined at a national level. The prevailing practice is for teachers to maintain a 'safe' distance from the community and to

live outside the village.

Another, continuing, national plan aims to provide high-quality potable water for all villages. In Ahuehuetzingo the first such water supply system was provided in 1965. The 100 metre well, with its diesel pump, pipework and a storage tank, was welcomed by the villagers who readily appreciated the contribution of unpolluted water to health. Also greatly appreciated was the convenience of not having to carry water from the springs feeding the river. Initially, five robust concrete public taps were provided; those wishing to have a tap on their house site had only to pay for such a connection to be made. The basic system was provided free of charge by the Comisión de Aguas Saludables, a Presidential commission. On completion of the installation the villagers, through the Village Council, assumed collective responsibility for the day-to-day running and maintenance. In the summer of 1974, as part of this continuing national programme, the water supply was modified. The old hand-cranked diesel engine had been installed prior to the introduction of electricity to the village. It was being replaced, free of charge to the village, by a three-phase induction-motor-driven pump. The public taps were also 'modernised', the sturdy concrete posts being replaced by more elegant, but less serviceable, fibreglass. Predictably, within a few weeks these much used taps were beginning to disintegrate. The villagers knew that these new taps were too flimsy to stand up to the heavy daily use demanded of them, but

because of their relationship to authority they were never in a position to request that the old taps be restored. Although trivial, in themselves, such events re-inforce the villagers' feelings of powerlessness in the face of external authority.

Over the years the village has been graced with a number of other schemes. Some have been directly useful, others not. The dam mentioned earlier was technically inappropriate. The volume of water flowing in the valley did not match the retention capacity of the dam and consequently it never filled. It did, however, provide sufficient water to enable a small area of village land to grow a winter maíz crop. Even its limited potential has never been fully realized as there was no follow-up programme to instruct the villagers in the use and control of irrigation water. The owners of the land served by the dam had a 'windfall' increase in productivity and enhanced land value. Equitable distribution of the land, which is provided for in the Agrarian Law, was not implemented. The villagers, in 1974, were still petitioning the municipal council for this to be done.

The attempt to extend the irrigation to the higher ejidal lands by the provision of a pump inevitably failed. Even before it was discovered that there was insufficient water retained in the dam to provide for a whole season, the ejiditarios found that they had insufficient money, no credit having been provided, to run the pump.

The whole irrigation project was ill-conceived and poorly executed. The main financial benefit gained was to the contractors who built the dam and provided the ancilliary equipment. This does not imply that there was any deliberate attempt to misuse the capital invested in this project, merely that the scheme took little account of the local conditions. Both the suitability of the site and the need for post-installation support were misjudged. At no time were the villagers encouraged to contribute to the planning or execution of the project and in this way their knowledge of local conditions was ignored.

The provision, in 1970, of a supply of electricity to the village, as part of another national scheme, had a dramatic effect on the morale of the villages. It is to them, perhaps, the most significant symbol of modernity and progress. The whole village is lit at night by street lamps. The villagers, for a fee, may be connected, and by 1974 about half the houses were using electric lighting. Television receivers were fast becoming less of a rarity with the village shops using them to draw custom. Two of these shops had refri_gerators, although one of these, which had been provided by the beer and refresco, soft drink, distributor, had been out of action for some time. They were used principally for chilling drinks. Only the maíz mill used the power directly to make money. The potential for secondary processing of agricultural products and small-scale industrialization, though recognised by the villagers,

was totally unrealized. The economic activity created by it in the village was merely re-distributive and did not bring any extra money into the village as a whole. The electrical goods and power cause a net drain on the economy. This, coupled to the fact that great prestige is associated with the use of electric lighting in particular, has led to some families suffering some hardship because of the resulting economic burden.[1]

It is a general feature of village development schemes that little is done to follow up programmes with advice and credit. The small-scale industrialization opportunities which existed in Ahuehuetzingo, such as for example de-husking, were not taken up. In the village electrification programme the technicians were principally concerned with the installation, with no-one taking any responsibility for the necessary continuity follow-up exercise.

In other aspects external authority is often equally arbitrary or unsympathetic. The main Acapulco-Mexico City road passes through the village lands and when, in 1974, the government planned a route alteration and the construction of new carriageway the usual preliminaries were observed. In accordance with the law the village received a letter informing them of

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1. Ernesto Gutirez, an electrical engineer responsible for rural electrification in Sinaloa, reported that with few using electricity productively many villagers paid to be connected to the main only to be subsequently disconnected because of their inability to pay for the energy provided.

the government's intention to make such alterations and the need to expropriate 35 hectares of land under the provisions of Article 344 of the Ley Federal de Reforma Agraria. There was, by chance, a copy of the Agrarian Reform Law in the village[1] and it was only when the particular article was read was it realized that the villagers had a fortnight only in which to raise any objection. Otherwise they would lose any right to redress. Had there not been this copy of the Agrarian Reform Law in the village it is unlikely that the villagers would have reacted in sufficient time to claim at least adequate compensation for their lost land.

A similar unsympathetic attitude was revealed when the Cuernavaca City council asked for permission to dump rubbish on village land. The letter stated that it was the duty of the village to grant permission and that in recompense they would be provided with the materials for an extension to the Ayudantia Municipal. There was no definition within the letter as to the type or quantity of rubbish to be disposed of in the two-year period asked for and no provision for adequate fencing during the dumping or of subsequent sealing of the tip. After long, and heated, deliberations on the possible threat to animals grazing around the tip and to the possible danger of pollution of the water draining from it, permission was refused. Had the

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1. The writer's copy.

City Council provided assurances as to its good intention the villagers might have responded differently. At least in this instance the villager was able to have the final say, although some feared that it would not be popular with the state government and might have repercussions.

These attitudes are also reflected at the municipal level. When the Ayudantia Municipal was built the materials were donated by the Municipal Council on condition that all mano de obra was provided by the village. This arrangement worked very satisfactorily. The only bitterness came when one of the full-time officials of the council visited the village one Sunday to see how work was progressing. Being Sunday no-one was working on the building although much had been done on it in the previous week. This badly upset the official and she proceeded to berate the Ayudante for the laziness of the villagers and their ingratitude. Further, she informed him, the building had to be finished by the following week as the municipio was donating a television receiver to be installed in the main room and she saw no reason why she should waste her time coming out to see it installed in an unfinished building. This outburst was accepted passively by the listening villagers.[1]

When the Ayudante Municipal was finished the State Governor announced his intention of coming to officially open it. This caused some consternation at both municipal

1. The promised television had still not arrived four months later.

and village level. The Municipal Council, concerned that the village should appear smart, hired a bulldozer, at considerable expense, to level the earth roads. This cosmetic operation was revealed for what it was when the first severe rainstorm after the operation swept away all the loose soil and restored the roads to their previous condition. The villagers, too, were bound to incur some expense in providing entertainment. Their problem was to decide the scale of the reception they should provide; too little could mean that the Governor would be discouraged by their stinginess and not include the village in any further state projects; too much and they would suffer financially without any assurance that their investment would show a return.

This client-patron relationship dictates political support in the village. Most villagers support the P.R.I., the ruling party, because it is the only one that ever campaigns in the village. All State and Municipal officers also subscribe to the party. To not support it would invite catastrophe, as governmental investment is viewed by villagers to be not so much a right to be demanded but a favour to be petitioned. The government does little to change this attitude, although party rhetoric enthuses on the protection of the 'rights of the campesinos'. Until governmental attitudes change and development plans become more responsive to the needs and aspirations of the campesinos much of the investment in the countryside will continue to be wasted.

HEALTH

The women of the village are justly proud of the health of their children. Some remember an episode in the 1930's when many children died in an epidemic, probably typhoid, that swept through the village. Since that time infant mortality has fallen because of marked improvements in general living conditions and in the general standards of hygiene and health.

For some time after the granting of the ejidal land living conditions continued to be poor, due to the lack of draught animals. As their numbers increased, all families in the village were better able to feed themselves. The coming of mouldboard ploughs improved land productivity, and an improving market position, with regard to the commercial crops and the sale of surpluses, has enabled the villagers to eat a more varied diet and to purchase medicines.

No one now suffers from obvious dietary deficiencies although few are overfed. Young children after weaning are given goats milk from time to time as a supplement to the food that the rest of the family eats. In this way they receive preferentially the nutrients essential for healthy growth.

The school has had an important influence in the general raising of health standards in that its teachings on the rudiments of hygiene have received wide acceptance in the village. Although crude, at least to those used to relatively aseptic urban societies, the precautions taken reduce the spread of intestinal disorders, so

common in tropical and sub-tropical zones, are highly effective. Although animals may wander into the kitchen at all times, the food is prepared on the raised stone hearth and the utensils and hands of those preparing the food are kept clean. Drinking water, which is of excellent quality, totally untainted, is taken from the domestic supply, pumped from the well. When drinking water has to be stored it is put into covered jars which are kept apart from those used for cooking and washing water.

Personal hygiene, too, is generally good with both soap and toothbrushes being used regularly. By good fortune the freshwater springs which erupt into the river just below the village form natural pools which permit bathing throughout the year. Hygiene standards have not yet extended to sophisticated sanitary arrangements, but the pit latrine is located in a corner of the house plot usually well away from the buildings. Whilst pigs and other animals are permitted to live and defecate around the buildings more complex facilities for humans are perhaps unnecessary.

The hygiene standards practised have in recent years been sufficient to prevent the breakout of any serious contagious ailments. Minor intestinal disorders are fairly common but the women frequently attribute these, rightly or wrongly, to food bought in the local market, which they consider often to have been contaminated by dirty hands and unhygienic displays.

The endemic disease of malaria has now been almost

entirely conquered by the widespread application of insecticide. Even though the village never suffered badly, being away from any stagnant water, all the houses are checked and sprayed periodically by government financed teams.

Three other chronic health hazards face the villagers - childbirth, scorpions, and alcohol. Improved midwifery, easier access to doctors and the occasional use of hospitals has reduced the health risk of the first. The second is combatted primarily by caution, with no one venturing out barefooted at night when they cannot see where they are putting their feet. When someone is bitten their survival depends both on their bodyweight and the speed with which they can reach a doctor, and be given an antivenom. The third, alcoholism, is considered less a disease than a result of overindulgence, and has no clearly-defined starting point as periodic excess of drinking is part of the natural way of life for most men. As has been mentioned previously, Ahuehuetzingo suffers less than many wealthier villages in the locality simply because of the economic consequence of extended drunkenness. Being a social custom, most men wish to drink in company which normally means in the bars or the shops selling beer. This makes it an expensive activity; added to this most men in Ahuehuetzingo generate their income by their own skill and labour and if continuously drunk their income falls significantly. In other villages where this linkage of factors is not as direct, alcoholism can become a serious social problem which may,

in the long term, affect the economy of the village.[1]

When disease or injuries occur villagers may turn both to traditional and modern medicines. The most common traditional remedies are the herbal teas. These cover a whole spectrum of disorders and may be purchased in markets throughout Mexico. These are administered by the matriarch. There are no curanderos, as such, in the village. Those herbs that grow locally are gathered by the women, others are purchased in the market.

Señora Santos, when her family developed a minor stomach ailment, produced the herbal tea appropriate to the overt symptom. It appeared to serve its function, as the discomfort passed within a few days. When her husband cut his finger badly, with a machete, she readily used iodine and lint bandages[2] and he went to the doctor in Puente de Ixtla for injections of anti-biotic. However, to further ensure his full recovery, she gave him medicinal teas and dressed the wound with a herbal poultice to draw out the poison. His finger healed quickly, although it remained a little stiff as the tendon had been damaged.

This readiness to use the doctor results from both education and increased monetary prosperity; health care has to be paid for at source, as social security has not yet been extended to the bulk of the people in rural Mexico. There are also more qualified

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1. See Fromm (1970) pp.156-178 where 18% of adult males were diagnosed as being alcoholics.
2. The writer had with him some simple medical provisions.

medical practitioners, in absolute terms, than previously, and access to them is thereby made simpler. The medical practitioner nearest to Ahuehuetzingo practises in Puente de Ixtla. The health centre, which had just been built in the village by the Seguro Social,[1] was expected to be manned by a doctor, at some point in the future, on one day a week.

Some of the women now go into hospital to have their babies, rather than depend on the partera, village midwife. This is costly but, as well as being safer, it has an added element of prestige attached to it.

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1. The Federal Social Security Service.

CHAPTER IV

CO-OPERATION

In the previous chapter co-operation was identified as one way in which villagers could strengthen their position relative to middlemen, to local and national markets, and thereby to achieve better prices for their crops. It is also a way of increasing the number of technological options open by pooling limited resources and assets to change - for example, in the way crops are produced. In terms of human relationships it both requires and engenders changes in the way in which individuals relate to, and rely on, one another.

Co-operation is the basis, or at least the proclaimed basis, of post agrarian reform organization in many countries of the world. In this Mexico is no exception. Co-operatives have both an economic and a political appeal and, as such, they are a particularly convenient form of rural organization through which to channel and administer development efforts. They may also facilitate rural planning by involving individual members in agreed schemes of cropping, so that manipulation to meet demand may be attained more readily than when cultivation is controlled entirely by independent individual smallholders. When promoted as a part of a national rural development scheme, co-operatives often have a political significance which far outweighs their economic and administrative significance. They are an easily-identifiable manifestation

of a rural development policy and they provide apparent evidence of mass support and political credibility for policy makers. Whether this is or is not illusory depends on the prevailing conditions at their formation and subsequently. In many instances they do provide the basis for a rural political power base which would otherwise be difficult to establish.

In Mexico the formation of co-operatives is a deliberate policy of government, particularly in the ejidal sector. Although the ejidos were formed originally for sound political, rather than economic, reasons the promotion of co-operatives has sought justification in production and economic terms. The political dimensions, despite Zapata and the Plan de Ayala, have not been furthered and have, in fact, withered. Political power, which moved back to the cities after the Revolution, remains firmly established there.

In other countries the co-operative movement has sounded other dimensions. In India the movement has a mystical facet which has tended to overshadow the failure to develop sufficient political 'muscle'. Consequently the non-government-sponsored Gramdan co-operatives have yet to pose any real challenge to urban based government. The political rhetoric, as in Mexico, is of rural reform and village improvement but without any deep conviction and no acceptance of reciprocal responsibility, and Indian Government programmes concentrate on the economic potential of co-operative agriculture.

As with the Mexican government it is the administrative convenience and the economies of scale which have been pursued in Indian government sponsored co-operative programmes. These inevitably benefit the medium-scale farmer best. The large farms have no need for such groupings and the very poor cannot afford to join them, and individually would not significantly increase the productive capacity of the enterprise.

China's commune system has political significance which dominates national policy, though it also makes very effective use of the economic merits of co-operative enterprise. On taking power the communist party sought to establish a robust political power base in the rural areas and to eliminate hunger from China. The resources available to implement a rural development programme were minimal and so the 'self-help' philosophy was developed. This had to depend on some form of co-operative base, both because of the nature of the Maoist political doctrine and the need to increase the effectiveness of rural labour. Over many years the commune system has succeeded in raising its production sufficiently to provide not only adequate nutrition for all but also a steadily improving standard of living in the rural areas. What is particularly notable in China's rural development is that there is no 'individual' alternative. Unlike Mexico or India there is not a dualistic development with co-operative agriculture alongside large-scale land ownership and private capital accumulation.

Each nation pursuing co-operative agriculture as

a part of its policy will adopt a detailed form different from that of others. This must necessarily be so as each will have different objectives, will face different rural conditions and will be based on different historical and cultural settings.

For a co-operative prompted from outside to thrive past the initial impetus of its formation, it must fit the requirements of its members or be in receipt of continuing external inputs. It is worth emphasising, therefore, that the promoters of such schemes must be aware of the nature and conditions of the lives of the recipients of their help.

EXAMPLES OF MEXICAN CO-OPERATIVES

With the break-up of the haciendas in the 1920's the ejiditarios, many of whom had not farmed their own land before, concentrated on the production of food crops to ensure a secure supply of food for them and their families. They had suffered the deprivations of armed conflict for ten years and had few immediate ambitions beyond survival. With the shortage of draught animals cultivation was difficult and, all too frequently, there was little surplus for market. Even on prime agricultural land food was often grown in preference to the potentially much more valuable cash crops.

Emiliano Zapata had confronted this problem in Morelos when he implemented his land reform programme in 1915. The haciendas had been broken up and the land distributed to the peones working them and to those in the surrounding villages. It concerned him greatly that in the first season the land was almost entirely seeded with maiz. Cash crops he realized were vital to raise the living standards of the villagers. In pursuit of this he went to great trouble to get the sugar mills into working order and exhorted villagers to grow more sugar cane.[1]

Mexico, in the 1930's, commenced a policy of industrialization which continues to the present time. The President of the day, Lazaro Cardenas (1934-1940), realized the danger of the rural sector failing to supply the urban markets with foodstuffs and raw materials, a

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1. Robles (1950)

situation which would benefit neither urban dweller nor campesino. Politically committed to land distribution, he advocated collective farming as the way to transfer, without loss of production, the large cash-cropping haciendas to their peones.

The national Ejido Bank, set up at that time, was intended to provide both capital and technical advice in order to continue and improve the enterprises. Credit was made available with the condition that particular groups in ejidos formed collectives. The bank also has a more general role to provide credit and its associated technical advice to ejiditarios in the less productive areas. To enjoy this benefit individuals had to form at least a 'credit union' to reduce the administrative burden.[1]

The most notable of the regions where collectivisation was fostered was La Laguna region around Torreón in the North, where cotton growing haciendas were expropriated. The new ejiditarios had never farmed their own land, having always worked for the hacendado. Whilst the enterprises were run in an oligarchic way the collective form of organization presented few difficulties. The Ejido Bank initially took much of the decision-making responsibility. The next presidential incumbent, Manual Avila Camacho, was less sympathetic to the notion of collectives and withdrew much of the support of his office. Accordingly many collectivos faltered and few

1. The forms that such organizations may take from 'credit unions' to 'collectives', are defined in the Direccion General de Organizacion Ejidal Publications (1974).

remain in recognisable form today. Some broke up fairly early after their formation, others adopted looser forms of co-operation.[1]

Since Cardenas' days the successive Presidents, with the exception of Luis Echeverria (1970-1976), have been less than enthusiastic about this form of rural development and have concentrated on the less radical 'credit unions' and marketing co-operatives as their vehicle for regulating credit and technical advice. All these co-operative agricultural exercises have suffered, to a greater or lesser extent, from a lack of autonomy. The Ejido Bank has used its powers to play a significant part in the form which this development strategy takes. The bank reserves the right to buy the seed, to sell the harvest on the members' behalf, and to direct which crops may be sown and the way cultivation must proceed. The statutory duty of the Bank to provide technical assistance (intended by Cardenas to make available economists and agronomists to those receiving credit) has resulted in technically sound agriculture being practised by many groups receiving credit. Unfortunately, the provisions have become institutionalized and many of the Bank's officials take a paternalistic stance when dealing with the recipients of its credit. The result is that many co-operatives are effectively run by the bank as businesses. Their members are little more than employees of the enterprise and are paid weekly wages

1. Eckstein (1966) pp144-149 and Whetten (1948) pp.202-203. See Wilkie (1971) for a recent account of the stresses in a cotton-growing collective.

in anticipation of the harvest. The members of such co-operatives have little practice in decision making or any knowledge of the details which underlie decisions taken on their behalf. They remain in a position where they have relatively little control over their economic and social futures.

During the Presidency of Luis Echeverria co-operatives were once again considered to be the way forward for smallholders, be they on privately owned land or on ejidos.[1] Many new co-operatives and collectives were formed during this period and those already in existence were more positively supported. With the end of the Echeverria regime the political initiative was again lost and many of these ventures ceased to function effectively.

The organizational form of credit unions, co-operatives and collectives, almost invariably, formally follows that dictated by the Agrarian Reform Law for Ejidos. The ultimate power within the organization rests with the Assemblea General, general meeting, of the members. For the day-to-day running there is an Executive Council, normally consisting of President, Secretary, Treasurer and Socio Delegado, who is responsible for trading negotiations. Others may serve in different executive roles depending on the nature of the enterprise. An institutional safeguard against corruption is the Consejo De Vigilancia, council of vigilance; this is a group elected solely to monitor the behaviour of the executive council and

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1. See for example Excelsior, 7th May 1974, p.18.

without any other function. Should malpractices or even inefficiency be observed, then this council would be expected to bring it to the attention of the members. Because of its passive role the Consejo de Vigilacia often becomes moribund or works together with the Executive Council, on the more active role of running the venture, and the safeguard role is frequently ineffective.

The following examples are drawn from contemporary sources and from material and insight gained whilst undertaking the study of Ahuehuetzingo.

FUERZA DEL PUEBLO - Santa Maria Del Mar, Oaxaca[1]

Santa Maria Del Mar is a small fishing village near the tip of a peninsula between the Pacific Ocean and a large saltwater lake, Laguna Grande, which has a 200 metre wide opening to the sea.

The people of the village are Guave Indians, descendents of the race which once controlled most of Oaxaca. The five remaining Guave villages border the lake and Guave is still spoken as the first language, although all the younger people speak Spanish.

Santa Maria is 25 kilometres from Tehuantepec (the nearest market town), but a large village, San Mateo, some eight kilometres distant, has a thriving local market. Santa Maria is connected by a dirt road to Tehuantepec, a journey of three hours by bus.

The principal cash income of the village is from fish caught in the lagoon from open canoes carved from tree trunks. This fish is sold dried in the local markets or fresh to middlemen from Tehuantepec and Salina Cruz. Staple food crops are grown on patches of the poor sandy soil around the village. The principal form of savings, as with most other villages in Mexico, is in the form of animals and the most valuable single herd contains more than 100 cattle.

A notable feature of the social organization of the village is that the commerce is run entirely by the women who have always been in charge of financial transactions. It is one of the few matriarchal communities in Mexico,

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1. Based upon a visit by the writer in 1974.

where all political organisation is male dominated.

In 1972 an employee of the Commisión Nacionál Consultiva de Pesca, Adalberto Ruíz, whose job it had been to promote the formation of fishing co-operatives, decided to resign from his job. His intention in so doing was to encourage the development of a fishing co-operative from within, rather than from outwith, a community. Accordingly he rented a house from a friend in Santa Maria, bought a four-metre outboard-motor-powered open launch, and started his self-appointed task of promoting such a co-operative development.

Initially the villagers' response was one of suspicion and his attempts to get them together to form a co-operative were unsuccessful. After six months of fishing with two of the villagers, who had no canoes, a co-operative was formed to fish, using both the open launch and another boat. The villagers had previously used only their canoes, which were relatively unstable and so were only suitable for the catching of small fish in shallow water, using nets made in nearby San Mateo. The launch was capable of catching much larger fish, including tibarones, sharks, in deeper water by using larger nylon nets. The original intention was to fish as a small fleet using both the boats and ancilliary canoes. This plan failed, largely because there was insufficient knowledge of this style of fishing and, in consequence, only scant yields were obtained.

After this reverse the co-operative abandoned any attempt at organised fishing and set up a rota system

for the use of the powered boat which had been lent to the co-operative by Señor Ruíz as a goodwill gesture. Teams of three and four men were set up to make use of the boat for a few days each. This system continued for six months with some teams being very successful. One team even earned sufficient to buy a small outboard for their canoe which increased the range of their fishing sorties considerably, although when using the canoes, they reverted to fishing lisa, a small silvery fish, and camarones, shrimps.

At the end of this six-month period the co-operative members were still operating as individuals; the teams, when they existed, usually consisted of groups which customarily fished together with canoes, often fishing in pairs. The co-operative was unwilling to purchase the boat, on the basis of the recent experience, and at this time in the face of such indecision, Señor Ruíz reclaimed the boat and continued, as before, fishing with his two colleagues and slowly refining their deepwater fishing technique. Some further innovation was attempted in fishing in the mouth of the laguna where it met the Pacific Ocean. The tidal race brought a good yield, but there was considerable risk in fishing in such a small boat in the mar vivo, the live sea.

The villagers then began showing more respect for this interloper as he had not left at the first setback and continued to try to get them to work together.

Later he bought a small truck in an attempt to market the fish directly to merchants in Salina Cruz

but, as it was without refrigeration, this meant buying ice to keep the catch fresh. His boat was not giving sufficient yield to make the operation worthwhile and the villagers were unwilling to part with their catches except for spot cash which neither the co-operative nor Señor Ruíz had. The scheme to bring improved marketing returns finally collapsed when sand ingress destroyed the truck's engine.

The only tangible effect that the formation of the co-operative had had in 1974 was that it had increased the income of some of the villagers by enabling them to earn enough to purchase a motor for their canoe. Nevertheless, it had stimulated much discussion within the village as to the role that a co-operative should have and it had also formally set up an organisation which could receive government loans and other finance.

In 1977 the co-operative was still in existence although the fishing was done as before, by individuals. In 1975 the government provided, as a gift, a 'deep-freeze' near the shore, and a hardcore road to it, so the fish could be sold in bulk at a better price than previously. The government was also interested in providing a loan for the purchase of more fibreglass boats to increase production.[1]

There is no doubt that the village had gained financially as a result of the formation of the co-operative endeavour. The windfall provision of a boat for a period provided a boost to the catches of fish and subsequently

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1. The more recent information is based on discussions with Adalberto Ruíz in June 1977.

the installation of a store ensured better financial returns. The long-term sociological impact is difficult to determine. No fundamental changes in the manner of working seem yet to have been engendered though Señor Ruíz continues in his efforts to encourage the villagers to utilize the potential open to them in collective endeavours.

DESARROLLO AGROPECUARIO EJIDAL DE SINALOA[1]

Since the 1940's the state of Sinaloa has been extending the area under irrigation, using water obtained from large dams in the mountainous ridge extending inland from the coastal plain. The population density in the arid plain had previously been low and the *campesinos* poor. By 1971 the area under irrigation in the state was over 450,000 hectares, 55% of this being *ejidal* land. Most of this land had been expropriated under the Agrarian Reform Law when irrigation was introduced and many of the *ejiditarios* were 'colonists' from other parts of Mexico, many of whom had worked on the irrigation project itself.

The opening up of virgin land to agriculture gave the *Departamento de Asuntos Agrarios y Colonización* a free hand to allocate large *parcelas*. In many of the *ejidos* the land grant was 10 hectares per *ejiditario*. This land is highly fertile and produces two, and is potentially capable of producing three, crops a year.

From the time of the land grants the banks, principally the *Banco Nacional de Credito Ejidal* and the *Banco Agropecuario del Nordeste*, have been willing to make loans to groups of *ejiditarios* as the agricultural potential, enhanced by irrigation, is now as high as any *ejido* land in the country. In 1971 over 50% of the irrigated *ejido* land was in receipt of credit from these two banks.[2]

To encourage the formation of credit unions and

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1. Based on a visit by the writer in 1974.
2. Desarrollo Agropecuario Ejidal de Sinaloa (1971). This compares with a total national figure of about 20% of *ejiditarios* receiving credit - Geneletti (1971).

collective farming on ejidos a state-based organization was set up in 1969 called Desarrollo Agropecuario Ejidal de Sinaloa (DAES) based in Culiacán, one of the provincial towns.

The first two years of the operation were taken up in the formation of a working team and in conducting a survey of the ejidos in the irrigation districts. One of the major concerns was to raise the productivity in the ejidos which was much lower than in the areas held privately. Although the ejidos constituted over 50% of the irrigated land area the economic returns were less than 30% of the total. The organization consisted of five branches - administrative, advisory, sociological, agricultural, and analytical. In all projects the advisers, sociologists, and agronomists worked in conjunction.

Because of the short-term nature of such projects (many only lasting in an unmodified form for one Presidential term of office), and also because of the urgency of raising production, DAES took a very active role in promoting collective groupings. By 1972 53 credit unions in 35 ejidos had been formed with the encouragement of DAES.

To encourage ejiditarios to farm collectively DAES produced much promotional material in the form of cartoon-illustrated booklets and lectures. An added encouragement to collectivise under the supervision of DAES was that, although credit was assured from the banks, the control which they exercised over the credit union was mollified by DAES. Bank officials in particular were treated with

suspicion by the ejiditarios, to whom betrayal of trust was a common experience when dealing with such officials.[1] DAES, then, provided a welcome buffer between the banks and the ejiditarios.

In the more recently irrigated lands, such as in Municipio de Sinaloa, the predominant bank was the Banco Agropecurario del Nordeste. Although this bank had less experience than the Banco Ejidal, and so did not find the highest prices for the harvest, it was believed by many of the ejiditarios to be less corrupt and less inclined to take complete control of the decisions affecting agricultural production.

One of the most successful credit unions farming collectively under the auspices of DAES was 'Ricardo Flores Magon'. This collective was based in the ejido Acatita II and had 30 members farming a total of 300 hectares. This was one of the first that DAES fostered and on its formation in 1970 received its credit from the Banco Nordeste. By 1974 its winter season income per member was 28,000 pesos[2] compared with an average annual income per ejiditario in Sinaloa in 1970 of 13,500 pesos (at 1974 prices).[3] Thus the cash income of the socios was over four times greater than the 1970 average, although no subsistence crops were grown.

Throughout this period the collective had been

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1. Sergio Musqueda, one of the sociologists working for DAES, informed me that in 1973 one of the officials of the Ejidal Bank had refused to pay to a credit union money which was three months overdue. Only by holding him at gunpoint and sending his assistant back to the bank did the socios get satisfaction.
2. 'Ricardo Flores Magon' (1974)
3. Desarollo Agropecuario Ejidal de Sinaloa (1971)

continuously monitored by DAES. The agricultural cycle was supervised by a DAES agronomist resident in the area and most assemblies of *socios* were attended by one of the DAES sociologists. The aim of the sociologists was to try and foster a sense of common identity for the *socios*, one to another, and encourage the continuance of working as a group. These DAES officials realized the importance of fostering as much autonomy for the collective as possible, but conflicts did arise in technical areas when the agronomist felt bound to insist on the 'best' technical strategy being followed.

The relationship between the bank and the *socios* seemed more strained, with bank officials simply taking over the conduct of the assemblies whenever they were present. The head of the sociological department, Jorge Madero, feared that when DAES withdrew from active supervision of the collective, as was its firm intention, then the bank would take over and run the enterprise as a business.

The collective was certainly a long way from being able to sustain itself. Its liquid assets in 1974 were less than 10% of the credit required for an agricultural cycle and so it remained totally dependent on the continued support of a bank. Capital formed locally was used mainly to buy implements. The society, however, had established a shop to sell goods at a minimum profit margin.[1]

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1. The only important commodity not stocked was beer. The Agrarian Reform Law prevents the sale of alcohol on *ejido* land. In the case of the newly colonized land it is all *ejido* land. As a result of this there was a black market in beer and the prices were highly inflated.

Although the collective was financially successful there were some disquieting signs of disunity. One of the socios had purchased a truck in 1973 and was spending increasingly more time conducting a carrier's business. He did little work for the collective and so did not collect the daily wage allocated for undertaking communal tasks. He did receive his share of the income from the harvest as a full member of the collective. The other socios were concerned about this. If it was a true collective, they argued, one should use all one's talents for the collective enterprise; to merely use it as a source of finance for another business was not just.[1]

Such a dilemma could be taken as an encouraging sign of a realization of the implications of collective work. It also was indicative of the increasingly money-oriented aspirations of many socios and ejiditarios.[2] Where money is available it is frequently spent on consumables or in certain cases, such as the one cited, on increasing the individual's income.

The collective, as it was operating, seemed to be well fitted to the short-term needs of all parties concerned; but there seemed little sign that a durable socio-economic structure was being established.[3]

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1. This came out in a discussion between Sergio Mosquida, the writer, and the president of the collective.
2. Carlos (1974) pp.24-36 argues that competitiveness and division have been much more conducive to economic success in the nearby 'La Fuerte' region than have been the non-competitive traits engendered in 'Los organizados' ejidos. To some extent this is due to the increased political awareness of 'los divididos' and their formation of active pressure groups.
3. Postcript - In 1977 I learned from Adalberto Ruíz that with the change of presidency and hence policy in Mexico many of the collectives had ceased to function as such.

EL INGENIO: ZACATEPEC, MORELOS

A further distinct type of co-operative enterprise in Mexico is represented by the cane-growing in land surrounding the ingenio, sugar mill, in Zacatepec. This is only some 15 kilometres from Ahuehuetzingo. Much of the irrigated land in the area around Zacatepec is used for sugar cane production. Although nominally a co-operative enterprise, from cane production to sugar sales, the ingenio itself effectively operates as a state-run industry with the workers merely confirming the appointment of the manager. There is little opportunity for them to reject the appointee, nor to make other decisions, as they are dependent on government patronage.

The ingenio is the largest industry in the area and sponsors many activities. Social security and free medical services are provided to co-operative members. There is a sponsored secondary school and even a professional baseball team. The co-operative members are financially secure and on the whole better off than their contemporaries on non-irrigated land. The system of management is totally paternalistic and underlying assumptions are not to be questioned. The ingenio needs to meet sugar production targets set by the Government and so is unable to encourage the campesinos working in the co-operative to innovate into other more valuable crops.

To grow cane is the requirement for membership. One third of an ejiditarios land, or one hectare whichever is the larger, must be planted with cane if he wishes to be

a member and enjoy the advantages of the co-operative. The ejidal parcelas on the irrigated land in Morelos are small, often amounting to little more than one hectare, and so, if those with small land grants wish to become members, thay have to devote most of their land to sugar cane production.

Once an ejiditario is a member the ingenio ensures that his crop is adequately cultivated by sending its own tractors if necessary and employing seasonal labour for land preparation, burning and cutting the crop. The work for the socio is light and the benefits many. Relatives get priority for jobs in the ingenio, children receive scholarships, and the range of other services is aimed at ensuring that the ejiditarios continue in membership.[1]

On the other hand, there is no real chance of participation and non-participation is not penalized in any way. The social effect on many communities is chronic. Alcoholism is endemic. In one of the villages serving the ingenio 28% of the ejiditarios are alcoholics; half of these plant sugar cane exclusively. In all, 30% of the ejiditarios are linked to the co-operative in the village; those who do not join are identified as the most self-reliant and financially successful.[2]

The co-operative based on the ingenio, then, is not a source of dynamism promoting rural development and encouraging innovation. It is much more concerned with supplying sugar to the market and is a co-operative in

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1. Fromm (1970) pp.130-133.
2. Fromm (1970) pp.156-178.

name only. It operates in much the same way as its predecessor, the *hacienda*, did except that the wealth is spread a little more widely to the *ejiditarios*. However, its economic base relies on the cheap seasonal labour which is provided by *jornaleros* and migrant labour, principally from Guerrero, not on that of its members.

WORLDWIDE CO-OPERATIVES

The co-operative enterprises described in the previous section demonstrate only Mexican examples of co-operative forms of organisation. It is useful to look at examples from other parts of the world in order to discover common factors and some of the differences. These differences are largely determined by differing boundary conditions to the community, its economic ties to the outside markets, to the prevailing political climate and, to a great extent, on cultural differences.

Common factors may be the result of coincidence or, more significantly, be due to fundamental similarities between the capacities and requirements of human beings of different races and cultures. Though cultural and historic settings are markedly different it may be possible to determine some of the common features which help determine success or failure for a co-operative venture. Such an examination into the different forms co-operative enterprise take may also provide new sources of ideas for development paths as yet untried in Mexico.

India

India is a large and complex country and no examples of co-operative agriculture can be taken to be representative of the whole. From the great diversity, however, a number of alternative development models may be taken and a number of widespread factors identified.

The caste system remains dominant in most rural areas, often being realized in the form of extended family links. Caste ties customarily provide a sound basis for co-operation in agriculture and joint financing in industry.[1] In the countryside the higher castes are made up of landowners, with the larger landowner in the highest echelon. This social position reinforces their political and economic domination in the villages. The system is counter-productive in that it inhibits co-operation between castes, with each indidual's position in the hierarchy being pre-determined.

The caste system is under attack from a number of quarters. The rise of capitalism in the cities and its spread to the rural areas hits at the traditional notion of strictly limited social mobility. Capitalist concepts encourage social mobility through enterprise and profit, and lower caste members may rise in wealth and political power to equal their betters.[2] Another attack on caste comes from the Gramdan movement. This has an egalitarian philosophy based on the teachings of Mahatma Gandhi and seeks to break down the caste system and establish village co-operatives. The movement has an apparent widescale

1. Rosen (1975) pp.177-178.
2. Srivanas (1976) pp.130-131.

grass roots appeal and a large number of villages are said to have declared for Gramdan.[1]

For principally economic motives the Government has encouraged and sponsored the development of agricultural co-operatives. These have had as their basis improved crop yields, using improved seeds and fertilizers, and have paid no attention to the philosophical aspects or the political significance of co-operatives.

The pattern that government-sponsored co-operatives have taken is that of basically credit unions. To join, a cultivator has to put up a surety of one eighth of the loan to be received.[2] This has been typically in the form of land; thus those on rented land or without land have been unable to participate. Because of the need for a capital involvement, and hence the risk of the loss of the capital should the venture fail, many smallholders were also unwilling to join such co-operatives. Much of the available credit has thus gone to medium-scale farmers. The result has been a marked increase in production from these farms to the neglect of the poorer ones.[3]

The Government programme for the 1950's had been more broadly based with a 'multi-purpose approach'. This was intended to consider simultaneously economic, social and psychological factors but it presented an impossibly difficult task to be undertaken within the limited budget and for the skilled personnel available

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1. Hubley (1973) p.9.
2. Shenoi (1975) p.287.
3. Shenoi (1975) p.290.

to the programme.[1] It was from this shortcoming that the production-oriented approach developed.

The relative simplicity of the production-oriented approach has resulted in the previously mentioned boost to production. One of its successes was in the village of Khandoi in Western Uttar Pradesh. Here the village formed its first co-operative society in 1955 to obtain credit for the supply of seed and fertilizers.[2] There was little general satisfaction with this enterprise as there was such petty cheating, often in collusion with the supervisor of the society, who was a government employee. This gave rise to feelings of distrust, both amongst the members and between the members and the promoters. In 1964, of the 18,000 rupees lent by the society about one-third had been obtained for use other than agricultural production in contravention of the rules of the society.

To obtain credit, surety was required and for a loan above 500 rupees this security had to be in the form of land. Thus the landless and small farmers, including those who rented land, were effectively debarred from participating. Later, a policy of crop loans was introduced for promoting the use of high-yielding seeds and fertilizer. For this credit the security could be in the form of the expected crop, and so went some way towards aiding the poorer farmers. However, there remained a need for capital loans for tube-wells and

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1. Etienne (1969) p.109. Dube (1969) gives an account of one of the earlier 'multi-purpose approach' schemes to promote rural development.
2. Etienne (1969) p.125-133.

pumps, as improved seeds will not yield adequately where the water supply is inadequate.

This economic discrimination did little, in Khandoi, to promote social cohesion.[1] The leaders of the co-operative also were effectively self-appointed and did not enjoy the trust of their fellow members. Until 1961 the co-operative remained little more than a credit union and the village became increasingly disunited. The extended families, too, started to split, with land often being divided between sons on the death of the head of household. This is attributed, in part, to the development of a money economy which may increase the intensity and frequency of family disputes.[2]

In 1961 a co-operative farming scheme, in which the property rights of the individual were preserved, was promoted whereby loans were made available to farmers who pooled their land and farmed it collectively. In Khandoi 39 individuals joined together and obtained loans, but within months the number had fallen to 19. Little work was done collectively and the discordant organisation which continued was used essentially to obtain credit which otherwise would have been unavailable.

The most successful development ex ercise from the point of view of agricultural production was the consolidation of land holdings on 1965. This was done in

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1. Orenstein (1965) pp.293-301 reports similarly on the divisive nature of co-operatives in Gaon where a number of co-operatives were formed along caste lines.
2. It is difficult to differentiate whether such a change in social behaviour is initiated by this single variable or whether, as appears more likely, that it is the result of many simultaneous changes. Etienne merely putsthis forward as an unconfirmed hypothesis. Etienne (1969) p.131.

Khandoi under government supervision. The consolidated holdings enabled individual farmers with quite small holdings (as little as three hectares) to sink a tubewell and install an irrigation pump. In one case a farmer with three hectares invested 18,000 rupees, of which 14,000 rupees were his own savings, and more than doubled his financial return from his crops in the first year of operation. His cane crop alone yielded an extra 5,000 rupees.

In short, the experience in Khandoi showed a remarkable enthusiasm on the part of villagers to respond as individuals to financial opportunities. The wheat yield in 1963 was 1,300 kg/ha, when the Indian average was 800 kg/ha, and by 1968 it had risen to 2,000 kg/ha as against the national average of less than 1,300 kg/ha.[1] The co-operative form of the credit union provided an administrative framework for distributing credit and enabled the medium scale farm to increase its productivity above that which it would otherwise have attained. Such developments clearly show the technical potential for improvements in yields. However, the majority of the rural populace, over seventy per cent, have land holdings of less than three hectares and so are often effectively debarred from such schemes.[2]

The only national movement that has been specifically aimed at the landless and near-landless has been the Gandhian Bhoodan, land gift, movement. This was a call

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1. Shenoi (1975) p.326.
2. Shenoi (1975) p.129.

for land gifts to be made by large landowners to the poor. This later evolved into the Gramdan movement.

The Gramdan village rests on the Gandhian philosophy of self-reliance. Land owners are expected to give at least one twentieth of their land to the landless and each member should give one fortieth of his income or its equivalent in labour to finance a village development programme.[1]

The village is administered by a village council consisting of all the adults of the village. They collectively decide upon their plans for disposing of the funds and administering the schemes in hand. Part of the village chest is normally allocated to small-scale industry to broaden the economic base of the community. Following the Gandhian tradition, of non-violence and concord, decisions are not made by vote but by consensus-often after exhaustive discussion.

The concept of Gramdan has obviously gained wide acceptance at a village level although it has never been supported or encouraged by the Government. The political dimension of the movement which challenged the land tenure system led to some victimisation of the leaders during the period of emergency declared by Indira Gandhi, with some of them being imprisoned.[2]

The Government has made some moves towards land reform to limit the maximum landholdings and to permit farmers to acquire land that they have been sitting tenants on so that they may develop it. These have to

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1. Hubley (1973) pp.8-9.
2. Private communication with John Hubley.

date been inadequate to markedly change the pattern of land tenure, and the bulk of the rural populace are likely to remain out of reach of the rural development programmes until they have a more secure economic base from which to work.[1] In areas where the government development plans have been successful there is evidence that more small-scale farmers are prepared to innovate into hybrid seeds and fertilizers, using the money loaned by the government to the co-operatives, which gives some basis for hope that the production-oriented approach to rural development can help even smallholders when administered with an understanding of their situation.[2]

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1. See Shenoi (1975) pp.137-150.
2. Etienne (1969) p.167.

China

In stark contrast to any of the co-operative ventures in India is China's commune system. This has been perhaps the most remarkable of post-Second-World War examples of rural development, both in size and significance. It has eliminated, for the present at least, the famines which have recurred throughout China's history. Over 80% of the populace of more than 800 million live in the countryside, with population densities of up to 200 per square kilometre in the more productive areas.

The unique history of the rural areas, especially in the fertile basins of the Yangtse and Yellow Rivers, gives an insight into the success of the commune system. The imperial history of the nation had produced a rigid society which in the countryside was characterised by absentee landlords, both large and small. Land was share-cropped by tenants with little land, often in a number of fragments. The rents were high, with 50% or more of the crop going for rent. There was little opportunity or incentive to innovate, and both large-scale flood-control and irrigation were impossible.

The overthrow of the empire in 1911 did little to improve the lot of the landless as land reform, although promised, was not forthcoming. The Japanese invasion provided further hardships. The rise of the Chinese Communist Party during the Japanese occupation started to offer a real hope of change for the rural poor. Although motivated by urban workers and intellectuals the party depended upon the continued support of the rural populace

for its military and hence political strength. The communist doctrine, originally developed by Marx for a post-feudal urban society, was adapted and refined to suit the needs of China's peasantry.

When the Party under Chairman Mao achieved undisputed power on mainland China in 1949 the government, unlike most other governments in the world, had its political doctrine and power based strongly in the rural areas. The commitment to raise the living standards of the landless was absolute in terms of priorities.

Throughout the struggle for power since the late 1930's the communist-controlled areas had taken land from the landlords and given it to the landless. Some 5% of the lands were kept for State Farms which retained the landless as wage earners. On other land many different co-operative forms of organisation were tried as part of the search for new policies. However, most of the land remained in or was redistributed in the form of small individual plots.

To increase production and encourage the development of scientific farming practices the collectivisation of farming was achieved in a number of stages. Between 1952 and 1957 groups of 20-30 households were encouraged to form 'Semi-Socialist Co-operatives'. These were in the later stages re-organised into large 'Advanced Socialist Co-operatives' of 100 households or more. By 1957 there were some 740,000 of these.

The 'Great Leap Forward' policy in 1958, with its emphasis on decentralisation of production and decision

making, brought executive power to the administrations at the county level. To ease the task of co-ordinating effort on the wide-ranging development programmes of water conservation the co-operatives were reformed into People's Communes. Initially some 26,000 were formed but, when many of these proved too large and unwieldy, they split, and finally 78,000 separate People's Communes were established. With little subsequent re-organisation this is the position today.[1]

With the development of the People's Commune the idea that land could be privately owned was abandoned. Land titles were destroyed(many being publicly burned) to signify the total commitment to a socialist pattern of rural development. So, unlike many other countries using co-operative forms of organization for aiding rural development, China has no private land ownership, and all major enterprises are operated collectively.

The size of commune varies according to local conditions and may be between 1,000 hectares and 20,000 hectares. The members form Production Teams of between 30 and 100 households, grouped in Brigades of between 100 and 1,000. These units are usually based on traditional hamlets and natural villages. The communes are formed from groups of, perhaps, three or four villages, and have a high degree of autonomy, being responsible to the State through County and Provincial governments.

The communes are run atall levels by revolutionary committees which consist of representatives of the party

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1. See Dickinson (1976) for an outline of the evolution of the 'Commune' system.

members, the people's militia and the people. Each group has a roughly equal voice on the committees. Decisions are made on the basis of discussion, and consensus is the preferred base for action.[1] The emphasis from the start of the communes has been on self-reliance and self-sufficiency. Most improvements and investment are self-financed and use, as far as is possible, the skills and resources available to the commune. There is much use made of 'labour investment' in large scale projects, which may borrow specialist brigades or volunteers from many communes to provide the workforce. Students and administrators from the cities have to spend time in the rural areas and provide an external stimulus for the commune as well as giving the urban dwellers an insight into the life style and reality of the bulk of the Chinese population.

The communes' principal connection with outside authorities is in the planning and allocation of production quotas. These are set with reference to previous yields of the commune, and it is the responsibility of the commune to try to exceed these quotas, which tend to be set so that overfulfilment is the norm.

The harvest is first used to satisfy the basic food needs of the commune and the surplus is sold, at fixed prices, to the State. A tax is applied to agricultural production. This is based on the yield of the land at the time of assessment, and the average rate is 8%.[2] This

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1. Chen (1973) pp.135-137.
2. Wong (1975) p.126.

tax may be reviewed quinquenially but ~~this~~ has not been altered since it was first set in most cases. Thus increased production is not penalized by escalating taxes and these may now represent as little as 1% for many communes which have been successful in increasing their yields. The average rate in 1974 was 5%.[1]

The funds raised by the sale of the surplus harvest is used to finance all the capital requirements of the commune, such as tools, fertilizers and machinery. The wide range of social services, including schools and medical services, are also paid for from these funds. The state provides no aid in terms of gifts, though fixed-interest loans are available for specific projects, and all development at the commune level is self-financed.

Although the formation of communes was effectively mandatory their formation enhanced the administrative autonomy of the villages and their ability to resolve their own local problems. It was also associated with an improvement in yields and general living standards and so was welcomed by many. The 'Great Leap Forward' also sought to bring industrial production to the countryside and, though many problems were encountered in its implementation, many communes have industrial plants making and assembling such things as electric motors and agricultural machinery as well as the more conventional maintenance workshops.

One of the more successful communes in North China

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1. Etienne (1975) p.144. See also Hinton (1966) pp.216-218. for a description of the taxation system in Long Bow.

has been reported on by Chen.[1] The Great Felicity Commune has 40 brigades, 116 production teams, 27,800 people and 4,800 hectares of land. In 1965 they averaged 675 kg/ha for the production of wheat. By 1966 this had risen to 1,200 kg/ha and was expected to be 3,000 kg/ha by 1973 (the year the estimate was made). In 1973, 30% of the land was cultivated by seventeen caterpillar tractors which were maintained in the commune workshop. A factory had been set up and in 1972 produced the equivalent of £150,000 worth of agricultural equipment, The commune has also provided a grain mill and as well as primary education for all children, junior and secondary education for about half. There were also numerous other activities, including the cultivation of private plots and the cash income, over and above subsistence and welfare requirements, was about £90 per year in 1971.

The spirit is one of frugality and the emphasis on self-reliance means that maximum use is made of local resources such as manure and compost. The storage ponds are used for fish farming, and water hyacynth, the scourge of Africa, is grown in the drainage channels both for flow control and as fodder for pigs. The financial system ensures that surplus funds may be retained for re-investment. In the early years of communes in excess of 10% was held back for building up reserves. This has now reduced to about 6% releasing more for distribution.[2]

The country, province and national governments have

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1. Chen (1973)
2. Wong (1975) p.126.

done much to ensure the development of the infrastructure. The provision of electricity in the region, from small-scale hydro schemes, diesel, and via the grid system from large-scale thermal stations, enabled Great Felicity to erect 200 kilometres of distribution lines for light and power, both for homes and for mechanization. Fertilizers and pesticides have been made increasingly available to improve yields. Above all, the mobilisation of a large labour force from communes organised by the government has enabled large-scale water control to eliminate the risk of flooding in many areas where in the past it was a frequent cause of hardship.

The success of the system has rested to a large extent on the desperate conditions for the rural populace which the communist system has overcome little by little, and on the continuing enthusiasm of the Central Government. One characteristic of the enthusiasm has been the provision of vast quantities of technical and promotional literature to stimulate ideas and to encourage innovation in both techniques and organizational forms. In terms of hardware the Government effort has concentrated on the infrastructure necessary to foster development, with particular emphasis on water control, the provision of fertilizers and chemicals, and power production. Almost the entire labour force for the creation of the major civil engineering works has come from the communes themselves.

Within the communes the political dimension of the system is always brought to the fore with the 'correct line'

being sought and pursued continuously. It is the combination of enthusiasm and Chinese pragmatism that has led to this singularly successful form of co-operative rural development.

The commune system is not one that could be transferred with ease out of its historical and cultural setting, and its development has been a result of many impinging factors. Nevertheless its success must contain lessons for other countries.

D SCUSSION

The Mexican form of co-operative, whether it be a credit union or full collective farm, is, in general, orientated towards production. Most are financed by the 'official' banks and are a part of the ejidal system, and all purchases and marketing are done by the bank. Carla and Wilma Geneletti argue that the land-reform programme in Mexico and the subsequent development exercises were not undertaken in response to pressure from campesinos. Rather the 'peasantry' had been politically defeated by the 'bourgeoisie' who had taken power after the revolution and:

> '...the reform pursued - often not simultaneously - two goals: that of depriving the landed aristocracy of its basis of power, land, and at the same time transform the peasantry from a force of potential disturbance to the role of guardian of the revolution; and, secondly, economic development.'[1]

This in part, may explain the emasculation of the Zapatista power base in Morelos after the Revolution. The failure of co-operatives to develop any political dimension can also be understood with reference to this thesis and to the centralism of the political system.[2] Campesinos have been encouraged to join and participate in the Confederación Nacionál de Campesinos, a government-sponsored union, but there has been little incentive for groups of campesinos to form local power bases through co-operative enterprises. A not insignificant factor in maintaining the political 'status quo' has been the banks' capacity to provide credit. The form

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1. Geneletti (1972) p.4.
2. See Padgett (1966) for a review of the political structure of Mexico.

in which this credit is provided ties the recipient strongly to the donor. The framework, set in legislation relating to ejidos and the structure and rules of the banks, is dictated by government. This effectively discourages the formation or development of self-financing co-operative ventures. Without financial independence such ventures are unable to break with the patron/client relationship and the 'status quo' is reinforced.[1]

In Ahuehuetzingo the distrust of the 'official' banks was a strong enough disincentive for the founding members of the co-operative venture to go out of their way to find alternative credit sources. They preferred no credit to becoming 'wage earners' in an officially-sponsored co-operative. It is perhaps significant that one of the villages in the co-operative, Xoxocotla, had many ejiditarios working in the sugar-growing co-operative based on the Ingenio in Zacatapec. Their cynicism of the way in which that co-operative functioned may well have been a factor in formulating their prejudice against 'officially' sponsored exercises.[2]

The cacahuate co-operative members had their own vision of the development of their communities. These looked beyond the immediate priorities relating to production, to establish co-operative shops. Another was to extend their post-harvest processing and to sell direct to consumers. Such speculation occupied much of the time when members from the different villages met

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1. Stavenhagen (1969)

2. This is the same Ingenio as described in the earlier section.

socially. They felt, rightly, that the co-operative was 'theirs' and they could and would direct its evolution in whatever way they chose.

The collective group 'Ricardo Flores Magan' operating in Sinaloa under the auspices of the Desarrollo Agropecuario Ejidal de Sinaloa had started a shop but even though it had been financially successful they had been prevented from operating it freely because of the restriction on selling alcohol on ejidal land. Not only were they obliged to follow instructions in their farming activities, but their only financial excursion outside agriculture was strictly controlled by the same authorities. It was left to an independent 'black market' entrepreneur to supply beer, an essential element of campesino relaxation, despite the inflated prices.

The production on the bulk of ejido land remains relatively stagnant. The co-operative ventures which are formed have many cultural obstacles to overcome before they can operate effectively.[1] The organizational forms recommended by the banks and governmental agencies[2] are satisfactory enough but such organisations must be dynamic and adaptable if they are to serve anything but a few simple short-term objectives. Within Mexico there appears to be little evidence to suggest that they are, or are likely to become, dynamic or politically powerful. They may even become repressive as in the case reported by Wilkie[3] where an ejido, which was run as a collective

1. See the section on Co-operation in Chapter III.
2. Direccíon General de Organizacion Ejidal (1974).
3. Wilkie (1971).

cotton growing and ginning enterprise, deliberately allowed its numbers to decline without appointing new ejiditarios so that the members could increase their share of the enterprise. This was occurring at a time when the number of young landless sons of libres and ejiditarios was increasing. This serves to illustrate the point that co-operatives do not operate inevitably in the best interests of the community of which they are part. This could also be said to be true in Khandoi, where small farms were not included in the co-operative venture and so became relatively, and possibly in absolute terms, poorer.

A radically different philosophy can be seen in socialist co-operative ventures. In these the attempt is always to include the poorest into the venture, often at the expense of the richest. The rationale being that unless the poorest can be brought together to combine their resources and abilities they will remain peripheral to the mainstream society, and their lot will be to become poorer still.

The Chinese revolution was successful in transforming a decaying feudal society wracked by war, with much malnutrition and periodic devastating flood, drought, and crop failures. This transformation was achieved by retaining the population on the land and devolving responsibility for the land to those who worked it.

Emiliano Zapata, too, held this as an ideal. On the door of his memorial museum in Villa de Ayala is an oft-quoted slogan of his: "La tierra se deune a quien lo

trabajaba" - the land belongs to him who works it. Though he executed no plans for co-operative agriculture his system of land distribution initiated in Morelos during a lull in the fighting in 1914 allowed for land to be held either individually or for titles to be held in common by the village.[1] After the Revolution a dualistic system developed, with the Ejido system existing alongside large-scale commercial farming, with capitalism as its base. In China no such dualism survived. The process of land reform was completed rapidly and totally. The organisational form finally settled upon as the basis for rural development was the commune which, with its constituent Brigades and Teams, was normally based on an existing group of villages. The size of the communes was reduced to the smallest consistent with much local autonomy and the ability to undertake all but the largest infrastructure works: a keynote of Chinese policy. The commune exists as an administrative unit; the essential working unit was and remains the natural hamlet or village.

The political training which has predominated throughout the post-revolutionary period has laid great emphasis on the individual's responsibility towards his country, commune and brigade. Simple self-motivation is not encouraged and initiatives should be conspicuously aimed at the common good. Once incentive to produce goods has translated itself into financial terms with the effectively diminishing tax on production, so an

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1. Womack (1972) p.325.

increase in production raises the cash income from the harvest more than proportionally to the increase. The country has remained politically stable and the committment to the commune system absolute, so the villagers have felt confident to make long-term plans. The very old, the young, and the unborn are the responsibility of the commune and, so for the well-being of all, there has been a necessity to innovate to incorporate the young, to raise living standards and to limit the population growth.

Other socialist paths to rural development have been pursued with varying degrees of success. Each is particular to its own culture although lessons have been learnt one from another.

One notable African experiment has been the Ujamaa programme in Tanzania. Unlike most co-operative ventures, which are based around existing communities, the Ujamaa village has been created. The intention was that Ujamaa villages would undergo three initial stages of development. The first was for people to coalesce to form a village and to decide on its location. The second was to settle and build an infrastructure, with some provision of funds but fundamentally dependent on the efforts of the villagers.[1] Thirdly the village would commence farming and marketing collectively, and be eligible for credit and other inputs.

The actuality has been different, with much over-planning by inexperienced teams at the start. A spirit

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1. In many early cases the location and infrastructure had been provided and people found to populate it. See for example Towards Socialist Planning - Tanzanian Studies No.1, Tanzania Publishing House.

of dependence on central directives, 'commandism', was engendered in many of these intensively-planned exercises. A need for some planning was obviously necessary from the point of view of roads and other infrastructure, but for Ujamaa to succeed a self-reliance and community identity was essential.

Tanzania is both a very large and a very poor country, and perhaps these factors both helped and hindered the rise of the Ujamaa policy from its unsteady start. There is growing evidence of many communities developing a sense of identity and using the concept of progress through co-operative effort. Though the creation of a completely different style of living for families which have never lived in villages, let alone participated in collective farming enterprises, is something which must take many years to evolve. It cannot happen merely because it is a desired political objective.

Though the emphasis was initially placed on the establishment of new villages, to bring together the scattered rural populace to facilitate economic and social development, established villages were also able to register themselves as Ujamaa villages. Latterly the growth in the number of Ujamaa villages has come from this category.[1] Much less planning is required for an existing village to declare for Ujamaa than for the creation of a new one. The essence of a Ujamaa village is that there must be co-operative forms of organization and " ...where people live and work together for the good

1. Connell (1973).

of all..."[1] In proposals being put forward for the third five-year plan the emphasis is strongly on the formation of co-operative enterprises aiming towards eventual collectivisation in villages now existing.[2] This, it is hoped, will utilize more effectively the resources available for rural development programmes. It has also been recognised that for some time at least much agricultural production will depend on smallholders farming their family plots, and so resources must be made available to increase their agricultural production. The optimism of the initial plans to settle people into new villages and for them to spontaneously commence farming collectively has been mellowed with experience.

Whether co-operatives have been encouraged to form by the provision of capital, political motivators or simply by spontaneous enthusiasm much is needed to ensure that they succeed past the initial flush. Principally it is necessary that they proceed in a manner not antagonistic to their members' ambitions, expectations, fears, and insecurities. In a highly individualistic society, such as Mexico or Tanzania, mutual trust is probably as important a single factor as any other. Satisfactory collective production will not proceed if members fear that they will be cheated; it will be particularly difficult where the members have had the experience of having been cheated.

Planners often forget that villagers throughout

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1. Nyerere (1968) p.120.
2. Overseas Development Group (1976) Section 5.9.

the world have developed a practical and protective conservatism so that it may take much time, often many years, to trust a 'newcomer'. New ideas, too, can be considered in the class of a 'newcomer'. If they are to risk their livel hood on such things they must first trust them. The villagers in newly-established villages in Tanzania were obviously cautious about further trusting others immediately by commencing to farm collectively. The caution of the members of the cacahuate growers co-operative in Ahuehuetzingo is also clear evidence of this natural and necessary caution. Though their co-operative had been started from 'within' they were unwilling to pool their harvest and sell it collectively; each insisted on payment from the credit received before it could be taken from his house plot and his control.

Such apparent pettiness may well decline if the venture progresses satisfactorily but to trust another with the bulk of ones income for the year is not a decision to be taken lightly. Similarly to entrust ones land, and the security it lends its cultivator, requires great confidence and trust.

Such trust is not only something which must exist between members, it must extend to institutions and individuals outside the community which may control the destiny of the venture: the banks, officials, and particularly the stability of the political structure. Continuity in the long term is something which does not worry the affluent greatly. For the campesino a residential term of six years encompasses only six

harvests. If policies change on the change of Presidents, as they do in Mexico, then the campesino will be unlikely to trust too much to the latest incumbent's grand schemes for progress. In such circumstances schemes have to pay off rapidly and the risks be minimal for the campesino to willingly comply. If confronted he may agree so as not to cause offence,[1] but that is not the basis for any project to succeed without continuous supervision.

Only in the assurance that there is the likelihood of an enterprise succeeding in the long term as well as the short will a campesino in Mexico, or a poor villager anywhere else in the world, commit himself and his family wholeheartedly. He normally acts with suspicion - with good cause.

Co-operatives ideally operate through collective decision making both for day-to-day running, and for planning. Whilst this consensus politics operates then the society will have mechanisms capable of responding to different conditions. It is also a process by which the individual can ensure that his interests are not being jeopardised and so engender the trust vital for such an exercise.

The greater the degree of control exercised outwith the co-operative the more unstable the venture becomes. Such external decisions though they be technically correct, such as those relating to the agricultural cycle made by the agronomists in the collectives in Sinaloa, may weaken

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1. See Chapter III - The Village and the 'Outside'.

the confidence and decision-making capabilities of the members.[1] Decisions made from within may be considered to be to some extent optimal[2] from the point of view of the co-operative. The more remote the decision making the less local conditions can be taken into account and the more likely it is to be inappropriate, even in terms of pure technicalities.

If the concept of rural development through the promotion of co-operatives is espoused then, to be successful past the promotional stage, care must be taken to ensure that the ventures are as autonomous as possible. Obviously national objectives must be pursued but if decisions, which may be resolved at a lower organisational level, are actually delegated then the maximum of flexibility is maintained and the policy will be pursued in a manner most likely to be responsive to varying conditions.[3] Furthermore the effectiveness of the manpower will be maximised; firstly as the projects have a greater likelihood of achieving success and, secondly, the projects are to a greater extent self directed and require less administration. The only way to foster confidence in an individual's ability to innovate is to let him discover for himself that he can innovate successfully. If he is guided in every step not only

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1. For an almost diametrically opposite viewpoint see Schiller (1969) pp.48-63. Where the submission of the minority in 'democratic' decision making is advocated.
2. See Chapter V for further consideration of optimisation of decision making.
3. See Stolper (1966) for an exposition on the difficulty of detailed planning from the centre in a developing country.

will he feel severely constrained but he will also never develop the skills of decision making essential for him to continue on an autonomous path.

A cautionary note should be made on the consequences of such policies. The sword is double edged. The projects are perhaps more likely to succeed but may take an unintended direction. Economic success may also enhance political awareness, which could conceivably not serve the interests of the dominant political interests and, as such, may not be wholeheartedly desired. The more likely cause for the reluctance of many regimes, including the Mexican government, to wholeheartedly promote self-directed rural development programmes is a lack of confidence in the campesino's ability to intelligently pursue his own best interests and a fear that too independent campesinos may acquire sufficient political strength to reshape 'national interests'.

CHAPTER V

TECHNOLOGY AND INNOVATION

SOME THEORETICAL CONSIDERATIONS

At the centre of any discussion of the capacity of the Mexican *campesino* to innovate and respond to changing circumstances is the nature of his 'rationality'. To discount him as being lazy or unresponsive, *mente cerrada*, of closed mind, is an evasion of his reality and a comforting illusion to explain the failure of subsistence agriculture to develop into a dynamic supplier of urban markets. Such an attitude is common amongst the middle classes in Mexico City and provides some insight into the difficulty in planning and executing rural development programmes from such a base. If there is not the confidence in the *campesino's* ability to respond to initiatives from without and to build for himself from the initial impetus then development projects reduce to political palliatives or, at best, well-meant exercises in paternalism.

Deeper study illuminates some of the problems faced by the *campesino* and the rationality of his strategy of response. His attitudes may be directed to a large extent by his culture, with little conscious analysis of his own motives, but they are based soundly on survival. A single common factor which appears universal, irrespective of the cultural setting for those living near to a subsistence level, is risk minimisation. The individual *campesino's*

response to a potential threat will be different depending on his personality and situation, but the course of action he chooses in the face of it will normally be the one which he considers will maximise his security.

The adherence to tradition may be in part explained by this defensive response. Traditions give the implicit assurance of continuity. Success, or even mere survival, has been achieved in the past through the following of tradition and might appear to offer the safest course for future action. Conditions, however, change and traditional norms may no longer ensure survival. In these circumstances innovation is called for if the situation is not to deteriorate. If the alternative courses of action available seem to present a greater, or even equal risk, then one dictated by, or closest to, tradition will be chosen. The issue which is of most concern to the campesino when placed in a dilemma is which one is least likely to be a threat to his survival.

Such a course of action may appear an obvious and logical one, to actor and spectator alike, but it runs contrary to the myth that underlies much development planning - that the 'rational' man will maximise his income. The campesino has little in reserve - maybe insufficient to meet even the food requirements for the next agricultural cycle. For him to innovate may jeopardize his life, and that of members of his family, and so any new departure warrants very careful consideration. Where the issue is an assurance of survival or the possibility of profit the latter has the lesser attraction.

Lipton[1] suggested that if a model of 'peasant' behaviour were to be generated it must be based upon a 'survival algorithm'. One merit of this hypothesis is that it puts into perspective the value placed on tradition by those who have survived, perhaps for millennia, by following their traditional patterns of behaviour.

The algorithm, however, is not predictive and risk minimisation may take different forms in the same community. One individual might deviate from tradition, yet remain within the analytical framework, as competent innovation has survival value and he may have more confidence in his abilities than others have in theirs. The very diversity that risk-minimisation, as a non-prescriptive model, presents has in itself a survival value for the group rather than the individual. Diversity is the soundest base for any ecological system to maintain its stability. The more diverse the response to a threat to survival the less likely is an overwhelmingly catastrophic consequence. In the event of the lone innovator failing the community survives and the individual will be able to draw on the extended family and his <u>compadres</u> for support.

Thus the model, though formulated in terms of individuals' attitudes to risk taking, has implications for both the family and the community. Ultimately, the individual may preserve his own life at the expense of others but normally he will take some account of the interests of both family and community. The family is

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1. Lipton (1968)

the more immediate of these and, except in dire circumstances, the head of household will take into consideration the nuclear family when making decisions which have some bearing on its welfare. In extreme circumstances the head of household may abandon his family and ensure his own survival.[1] The village as a whole is rarely united when discussing plans for its development, but a threat to it is likely to be confronted squarely by one and all.

In this way one can recognise some of the reasons for the development of the Zapatista movement in Morelos and as a consequence its ultimate collapse. Entire villages were being threatened by the expansion of the haciendas; some had been absorbed completely, others merely lost their communal lands.[2] In response villagers united to press their claims for land. When these just claims were disavowed they then took up arms. This rising coincided with the beginning of the political upheaval that developed into the Mexican Revolution, and so was not suppressed totally. The revolt was carried to the whole state of Morelos and beyond aided, to a great extent, by the repression which followed the fall of Diaz. The rationale behind this was best summarised by Juvencio Robles the military commander of Government forces in Morelos in 1913:

> "All Morelos, as I understand it, is Zapatista, and there's not a single inhabitant who doesn't believe in the false doctrines of the bandit Emiliano Zapata."[3]

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1. Lewis (1969) pp.144-149.
2. Womack (1972) pp.75-83.
3. Womack (1972) p.196.

Many fled and many joined Zapata; both actions having survival value. In the long and bitter war which followed the Zapatistas pursued the limited goals of the Plan de Ayala.[1] They had no ambitions to hold national power and on occupying Mexico City in 1914 failed to take the political initiative. The result was that Zapatistas were politically outmanoeuvred throughout the Revolution and only gained a nominal voice in government after the accession of Obregon in 1920.[2]

The 'survival algorithm' then has some use in explaining the course of historical events. It also has repercussions on development policy. If a single pilot project were spectacularly successful it would not necessarily mean that it would be emulated rapidly or widely. Firstly, because individuals' perceptions of its success would vary; and, secondly, because widespread adoption of its form would render the society as a whole equally dependant on the inputs required by the technologies adopted. For example a market failure would be equally disruptive to all, and the individual would be unable to seek support from his extended family and friends as he would in a heterogeneous society.

Such considerations can help to explain some of the responses to change in Ahuehuetzingo. It is a model of behaviour that becomes less dominant as individuals become, and feel that they are, assured of their continued survival; the less marginal the individual's state the more freedom he has to pursue his 'natural' inclinations.

1. See Appendix A.
2. Womack (1972) pp.491-502

The adventurous are given the possibility to innovate — though, of course, social and perceptual constraints continue to operate. These constraints change over time and the changes may be due to an infinite variety of factors. No society can truly be described as being in stasis. From year to year and from generation to generation conditions change. In central Mexico the conditions under which the campesinos live have been in a state of flux throughout the known history of the region. This continues now as much as ever. Recently, though, the form the changes have taken have changed most markedly.

Rapidly changing circumstances, both inside and outside the village community, means that what have been traditional norms are being brought continually into question. The traditional value system is being threatened by the rise of commercialism and the promotion of materialism by the media. Bottled beer is the 'normal' drink for men, television is becoming a significant leisure activity for children. Status is no longer obtained principally from activities such as being Mayorodomo of the fiesta.[1]

The villagers have changed and will change further. The challenge for those seeking to improve the conditions for them through rural development programmes is whether the changes reflect the positive dynamic of a village self-directed towards economic and social development. For change to continue as a reaction to the unregulated pressures from outside, which impose their own dynamic,

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1. See Fromm (1970) pp.134-135 for a discussion of the changing significance of the fiesta.

will not produce a forward-looking innovative rural base able to contribute towards national development.

Risk minimisation is a dominant restraint on development, as it is likely so to remain, whilst the campesino is unsure of his security. The significance of the risk involved in any proposed course of action is that which is perceived by the campesino, not by the promoter; only the confidence of his own past success will persuade him that traditions may be breached without peril. One must not forget that traditions are based on past successes; as such they hold the allure of unruffled continuity which might perpetuate them beyond the end of their useful life. In a rapidly changing world optimal success depends on the timely abandonment of defunct concepts. To retain them in a quest for an illusory security compounds the problems which change itself presents. Ideally rural development is an accelerated evolution that builds through success the individual's confidence in his ability to control his destiny.

Once a campesino has risen above a level of bare survival he may respond increasingly in an income-maximising way of life. This may take the form of greater innovation or even be exploitative. It is marginality that is perhaps the biggest block to development in rural areas. Once the subsistence farmer has assured his and his family's security then he may well respond in a way totally different to before and appear, from the outside, to be much more receptive to change

and innovatory concepts.

The most dynamically innovative area in most 'Third World' countries is in the shanty towns surrounding all large cities. In these, people have no traditions to cling to for security and the best way to ensure survival is a quick wit and an opportunistic philosophy. Informal and small-scale industry in such areas is well fitted to the economic conditions, and adapts readily to changing circumstances.[1] This is in marked contrast to larger scale industry which normally imitates that of developed countries with the minimum of innovation and adaption.[2] These successful small-scale industries in the shanty towns are evidence of the potential for development, both within these areas and in the countryside, which provides impetus to the continuing influx of people to the towns.

In his book on Tzintzunzan, Foster[3] presents the thesis that villagers living through generations of limited horizons and poverty generate an 'image of the limited good'. All the things that an individual may want are available but in limited quantities. For many things this is a literal truth. If the village lands are bounded by other communities then land is available in a limited quantity. Water too is limited. If production techniques and traditions remain unchanged then the total product will remain unchanged subject to the vagaries of the weather and other 'acts of God'. The income

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1. See for example King (1973)
2. ILO (1972) pp.180-192.
3. Foster (1967).

received from trade will be largely unaltered and so increased wealth for an individual within the community may only be achieved at the expense of others.

This image of a limited universe may also extend itself to health, friendship, love, respect, power, influence, security and other relationships which, within the village may be considered to "exist in absolute quantities insufficient to fill even the minimal needs of the villagers".[1] In circumstances where factors have remained constant for generations an image may be generated by which things are perceived of as being inalienably available in strictly limited amounts.

If one individual in the village takes land the others must have less. By an extension of such relationships, should one become richer the others poorer, and so on. In such circumstances the acquisition of wealth may be considered either a selfish act or the result of luck. In societies where animals are not only the symbols of wealth but wealth itself, fortunes are rapidly lost by disease and so over the generations families may accumulate wealth only to lose it again. In such conditions the acquisition of wealth (and its loss) may readily be attributed to luck. However, where an individual is visibly striving to earn wealth then he may be perceived to be deliberately depriving others of it. The first case is considered random, the second is malicious and will result in sanctions being applied.

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1. Foster (1967) p.123.

This of course is the converse of the 'Protestant ethic' which eschews luck and lauds frugal endeavour.[1] This image of a limited universe will also affect attitudes towards effort and production. The land only has a limited amount of 'good' to give and to increase its yield significantly in one year will drain it for the next. The body only has a given amount of vitality; to over-exert it in a futile attempt to make yourself wealthy through your own efforts, will not only be condemned by your neighbours, but may shorten your life span. All this runs in direct contradiction to the 'Western industrial ethic' in which effort finds its just reward in the 'creation', not the taking, of wealth.

It could be argued that such a concept of an absolute limit to both the physical and metaphysical world could exist and dominate values in a static community surrounded by its peers. When social changes occur, and novel outside influences impinge, the horizons of the village broaden and some of the past constraints weaken or disappear. Since the revolution the broader educational influence and wider cultural exposure have certainly broken down the more obvious manifestations of this concept, but it still holds some sway subconsciously. The largest house in Ahuehuetzingo is owned by a family which is no longer wealthy. The hardest working families are not the wealthiest. The man who takes potable water for his fruit trees is stealing from the limited quantity available.

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1. In Spanish, of course, to win and to earn are the same verb - ganar - the lack of differentiation may save embarrassment.

This undertone of perhaps inevitable stasis need not disable a village from improving its condition, but certain paths may be followed more readily than others in that they do not conflict with any such a predisposition. For example to cheat the middleman of his cut by selling the harvest direct improves the financial yield of a given harvest and hits back at the despised coyote. The same amount of wealth is available; it is merely distributed differently.

Co-operation between individuals in agriculture may be inhibited by these considerations. Each is afraid that he may lose something of his very limited wealth by the malpractice of others, and, besides, the proponents of the 'limited good' could agree, co-operation will not increase the total wealth of the community. Where projects fail they strengthen the 'image of the limited good': where they succeed that success could be attributed, by the same logic, as readily to good luck as to effort.

This hypothesis may, as in the case of the risk-minimisation algorithm, provide an analytical framework which helps to explain both why a particular course of action was pursued and its consequence. It cannot be used as a prescriptive model for development as, in a sense, it embodies the antithesis of development theory. Account may usefully be taken of it when considering where obstacles to development plans may arise and how in part they may be overcome.

Perhaps any funding from outside is acceptable to

the village as it may 'capture' the wealth in whatever form it is in as, in the long term, the total wealth of the village will be increased by just that amount.[1] In fact few villagers in Ahuehuetzingo would accept such a dogmatic and fixed view of wealth.

On a more worldly level one must recognize the effect that external influences have on any village. Ahuehuetzingo is situated on the edge of an extensively-irrigated area where sugar cane predominates but many other crops are grown. These influences have a profound affect on the village. Irrigation is seen as a key to high-yielding agriculture. The presence of machines and of yield-enhancing fertilizers disavow the concept of the 'limited good'.[2] Above all, the villagers have road communications and a chance to see alternative ways of doing things which provides a strong impetus to innovate. Influences of this nature may be seen as enlarging the area from which the lessons of risk-taking are learnt. They teach the value of both caution and innovation.

A further factor which argues in favour of the ability of these villagers to cope with the changing world and even to thrive in it lies in their history. Unlike many villages in Morelos it was never incorporated into a <u>hacienda</u>. Though bounded on all sides by them their village lands remained untouched, largely because they were not valuable enough to be worth seizing. The

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1. It should be emphasised that this concept is not wholly operative in Ahuehuetzingo but vestiges of it are perceivable.
2. Although on a global scale the hypothesis may yet be proven as we further exploit our finite resources.

villagers then were free to control their destiny to a limited extent and were practised in resolving their own problems. Not for them the paternalistic control of the *hacendado*; they lived and died their own masters.[1]

They fit, on the whole, into the pattern typical of many 'peasant' societies throughout the world.[2] Heads of household are fiercely individualistic and proud, insults from one's peers are not taken lightly. Feuds are sustained and murder is not uncommon in Morelos. It is such people who started to fight for the land from which they had been dispossessed in 1910. The *peones* from the *haciendas* did not enter the *Zapatista* forces until some years later, and then only when faced by intolerable threats to the basis of their limited freedom - their land.

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1. Fromm (1970) pp.109-125 concluded on the basis of mass psychological tests in a village some 15 kilometres from Ahuehuetzingo, that the most productive individuals in that village were from families who had migrated from such 'free' villages after the Revolution. Those from villages 'tied' to *haciendas* were passive and less self-reliant.
2. See Shanin (1972).

VILLAGE LEVEL TECHNOLOGY AND INNOVATION

When discussing technologies at the village level it is important to differentiate between their particular functions. Three broad categories may be identified; directly productive technologies which are concerned with food production or the generation of wealth; technologies which relate to status, comfort and/or the 'good things of life'; and those which contribute to the infrastructure which may relate indirectly to both the generation of wealth and the enhancement of the community's and the individual's status and well-being. The first two are concerned principally with individual decision making, the latter with collective action-or, at least, with the effects on the community at large.

When decisions are made concerning productive activities risks are bound to be taken and the risk minimising constraints, as described above, will apply to any change in technology which is considered. This inevitably presents dilemmas which may be most simply resolved by doing that which has been done before-i.e. following the tradition, be it an old or a new one. Thus, even though a surplus may be generated through a productive activity it may well not be invested in attempting to increase the productive gains through a a further change in the technology of production. This is likely to be true whether it be a change in cultivation practice, such as the purchase of fertilizers, or the acquisition of an income-enhancing mechanism such as a peanut sheller. The surplus may well be saved, in part

or in whole, and normally on the hoof, as a hedge against future hardship, or it may simply be spent on other non-productive things.

Non-productive spending is not subject to the same considerations. In a productive investment what is purchased is not the desired 'end point' but the means to the end - the investment may or may not 'pay off'. In a non-productive investment what is being purchased is the desired end product, be it a new house or a watch. In this sense satisfaction is guaranteed. Thus to invest in a new technology of this type is not subject to the same restrictions as its productive counterpart. Subject to social constraints, the extent to which a new technology is socially acceptable, and the availability of surplus resources, non-productive innovation occurs readily.

This dualistic attitude towards innovation may be fostered by a lack of realization of any causal relationship between investment and income. Foster observed that an individual's success in Tzinzantzan was more often attributed to luck than to endeavour.[1] Though such an attitude is not overt in Ahuehuetzingo it may underly some of the attitudes towards investment of both money and labour.

Much of the 'modern' technology observed in the village has a non-productive role. Radios are commonplace and with the coming of a public electricity supply record players and television receivers are being purchased by

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1. Foster (1967) p.151.

those who can afford them. These acquisitions, together with electric lighting, have a prestige value and some families gain obvious satisfaction from displaying them. Others seem reluctant to enter into such a display. Santos owned a transistor radio but it was rarely used and then only very quietly.

There is a conflict between the traditional attitude towards wealth and possessions and a more modern, materialistic one. The acquisition of wealth historically could be an embarrassment - others may have suffered in its acquisition. During the Revolution many caciques were slain because of the resentment of their poorer compatriots. The modern materialist doctrine, advocated explicitly in the form of advertisements on the radio, television, and in printed form, and implicitly by the display of wealth by those coming into the village, and seen when travelling outside it, would suggest one need have no feelings of guilt about acquiring wealth.

Since the Revolution the families which have been at the political centre of the community (Santos is a member of one of these) have tended to be more reticent than others in displaying their possessions. Perhaps there is merely less need as they already enjoy some status from their social roles. This is certainly true in part but, more significantly, those who do possess and display wealth make little attempt to play a part in the village affairs and would appear to be to some extent social outcasts. Thus it could be argued that gross materialism is not the predominant attitude in the village. The

acquisition of wealth and its display still carries something of a stigma and on a number of occasions when the writer was in the village it was suggested that the wealthier members of the community did not give either willingly, or in proportion to their wealth, to village activities. The collection for the fund to receive the State President was one occasion, the fiesta another. From this indirect evidence the 'image of the limited good' might be at least a relevant consideration in the village context when looking at attitudes to the display of acquired wealth and in the way individuals plan for its acquisition.

The shop owners were recognised by fellow villagers as not being 'productive' in the sense that they did not bring any money into the community. Though they provided a much-needed service many resented that their produce was more expensive than in nearby Puente de Ixtla. This was, of course, inevitable for most of their stock as they purchased much of it in Puente. Their role was perceived by many to be parasitic and to be little better than the universally-resented coyotes. They too realized their position and felt none of the constraints about the display of acquisitions, especially those that attracted customers away from their competitors. They readily adopted electric light, refrigerators, and televisions; one of the bars even purchased an old 'juke box'.

Not all non-productive innovation is effectively subject to social constraints against display. For

example the widespread adoption of machine-made trousers as a replacement for the cheaper and more practical calzones would suggest that to be seen as being 'modern'-like people in cities - is important. This contrasts sharply with the anti-urban reaction during the Revolution when to wear trousers in Morelos was to risk one's safety.[1] Now it is only the old men who persist with their home-spun cotton clothes.

In other aspects, too, dress has changed. The younger women and girls wear patterned cotton dresses whilst their elders retain the more sombre black dresses. One important aspect of daily attire has remained unaltered for the men. This is the wearing of huaraches which are more suitable for fieldwork than shop-bought shoes. These, though normally worn by all, are replaced by shoes, especially by the young men, when they wish to impress others.

Generally accepted prestige symbols are closely linked to the imagery of 'modernity'. The villagers are well aware of many of the urban attitudes to them. They are viewed by many city dwellers as being backward, lazy, and steeped in stifling traditions. Often their only recourse is to mimic what they see as being in the urban style. It is a plea for recognition as much as a desire for the material goods themselves.

One immediately-visible image a village presents to the outside world is its architecture. In the days of the Diaz regime prestige houses in the village were

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1. Womack (1972) p.334.

grand affairs of plastered adobe. For those who could afford them glass windows with iron security grilles provided the finishing touches. The style was copied from the old *haciendas*. Today's model house is borrowed from the city with its cast-in-situ reinforced concrete frame and fired red-brick fill. Most villagers aspire to such a house irrespective of its architectural merit, its cost, or its comfort. Even those constructing *adobe* dwellings do not intend them to have the permanence of their predecessors and no longer plaster them.

Though costly, brick and concrete housing is more a symbol of modernity than of wealth and, perhaps, especially intended to impress visitors to the village. Its corollary, flush toilets, are not used. These would not be visible from the exterior and so would have less impact on first appearance than the structure itself.

The latest public building, the *Ayudantia Municipal*, was constructed around a reinforced-concrete frame and there was talk of constructing a second storey to it, though ground floor extensions could readily have been made. Again this is in mimicry of the urban style. The villagers wished to confirm their own belief in their modernity and to impress it on others.

Many other non-productive innovations may be mentioned which, though trivial in themselves, indicate the readiness with which new things may become accepted. *Pulque* has been completely supplanted by bottled beer and *refrescos*, both significant drains on the resources in the village. The villagers are getting more and more

drawn into the wider, national, economy largely on its terms. Children are particularly susceptible, being much influenced by their exposure to an educational system which is urban biased and uses books showing eating, dress and housing styles previously unfamiliar. Television is another powerful visual and cultural force, as is advertising in its many forms.

The innovations which relate to the infrastructure of the village, and general prestige and well-being of the community as a whole, are generally well received but are normally initiated, and sometimes completely carried out, from outside the community. In this poor village, land reform was accepted gladly when it was offered, though not fought for by most. Similarly the original school and the latest one were provided by the State. Though looked on as a 'good thing' the villagers take little active part in its running.

Where action is needed by the village to promote something for the common good then collective action is required. As has been discussed earlier, co-operation in the village is difficult to achieve and frequently requires an external stimulus. The Ayudantia was only built because materials were provided free of charge. The medical centre was provided entirely free of charge to the village as were the dam, the potable water supply, and the electricity. This is not to say that villagers will not and do not contribute to the infrastructure, merely that they are unwilling to volunteer.

Collective action is occasionally stimulated, as in

the case of the school parcela,[1] but the Federal and State governments have taken much of the responsibility for infrastructure. The villagers willingly conceded such responsibility and, in general, have welcomed the changes made. They are also fatalistic about what future changes may occur and do little to solicit them or take any direct action themselves.

When an individual is considering whether he should advocate or contribute to a plan to improve the village then he will inevitably consider what is in it for him. The returns are rarely direct and others may benefit disproportionately. Santos, as Ayudante Municipal had, for two years, tried to promote such projects as the Ayudantia Municipal with some success. He complained that he had spent his time trying to promote projects and felt that people suspected him of mal intenciones, bad intentions, and that he was just trying to push himself forward, to elevate his status. He refused to be proposed for a second term because he felt it involved too much work and people didn't respect him for it. Most villagers are sensitive to criticism and are unwilling to thrust themselves forward to promote grand schemes. Such initiatives certainly come more readily from outsiders, but in these circumstances the villagers can easily absolve themselves of the consequences.

Productive investment is one area where the villagers inevitably take responsibilities. When capital is generated by the sale of the harvest, animal husbandry or

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1. See Chapter III, Co-operation.

a secondary economic activity it may be used in a number of ways. It may be saved as cash or on the hoof to increase security or for a specific purpose. Santos has been putting money aside, where possible, for his new house and buying materials piecemeal.

This outlay is a non-productive investment and could equally be made in a number of different things. Drinking may be looked on as a non-productive investment and one which drains away a not inconsiderable part of many families' budgets. As has been discussed earlier, such decisions are fairly simple to make as the desired end product is being purchased directly - even if it is a drunken euphoria - though the priorities of course vary from person to person.

Many have been connected to the mains electricity supply. The effect of this investment is immediate and direct. Light and prestige. There is little uncertainty in such an investment. There may, of course, be indirect linkages with productivity when the light is used to extend the working day or the power is used directly in an economic activity.

Most villagers with electricity use it for light and entertainment only. One of the shopkeepers uses it to enable him to make clothes at night whilst the shops, in general, use it to extend their 'selling day', and for appliances. Only one villager uses electricity directly for powering a process; he is the owner of the maíz mill. This is a simple capitalistic investment by a wealthy villager and is unique in the village.

There are other productive investments which are in their own way unique. They have been made by the better-off villagers and demonstrate that when individuals are assured of their survival they may then feel free to respond to opportunities in an income-optimising way. The villager owning the tractor has a herd of over 100 head of cattle as well as land holdings in excess of 20 hectares.[1] Another villager who lives on his two hectare orchard smallholding, some 500 metres from the village, has invested in both a petrol-driven water pump for irrigation, fed by the water leaking from the base of the dam, and a truck to get his produce to market and for hire. He is a solitary character who enters very little into the social life of the village and so is not well liked, but he is a successful entrepreneur who is seen to have invested his money well.[2]

These innovations each demanded a significant investment of capital and were speculative in nature. They were only open to those with sufficient security and surplus funds to take the necessary risk. Many other innovations in productive activities have occurred. which did not require a financial investment or involve significant risk. Skill acquisition is a notable example.

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1. Although he and his family did not display their wealth through ostentation, in dress or in housing, they did spend money in non-productive ways. He drank regularly, as did most men at the weekends, and even offered to buy the writer's camera as he fancied taking pictures.
2. Using the character analysis developed by Fromm and Maccoby (Fromm 1970) he would be described as being a 'productive - hoarding' individual.

Most villagers claim to have skills outside agriculture. These may be learnt in a variety of ways: passed on from father to son, learnt fortuitously as a result of chance employment, or be sought out. Most of the village crafts have been passed on naturally from generation to generation; the fabrication of adobe bricks is such an example. Others are widespread such as the constructional skills required for home building and fencing. Before the past few decades there was little job specialization in the village. Now a number of 'experts' are appearing, from amongst the villagers, who hire their labour out to others. Santos is the plumber and also has sole responsibility both for the operation of the diesel water pump and for carrying out routine maintenance on it. Another villager is a painter, another a plasterer, and so on.

With the introduction of more machines into the community it is likely that a general maintenance man will appear. Already those with broken ploughs were lamenting that the nearest place a repair could be carried out was in Puente de Ixtla. When there is a sufficient demand in the community for a skill then it is not normally long before an individual takes up the opportunity whether he is adequately trained or not. Santos received no formal training in plumbing skills: he merely picked up what he could by watching plumbers at work.

Most of the village craftsmen are married men. When the young acquire skills they are normally used as a means of finding work away from the village. The

need for a secondary income within the village is largely as a result of family ties. Men are reluctant to leave their wives and children to find work. Many of the enterprising young willingly seek work outside the village some as waiters, as Santos had done in his youth, others as labourers on building sites, where new constructional skills can be picked up. Some of these men may later return to the village and so enrich its skill base.

The most academically competent invariably leave the village for good after finding suitable work elsewhere. Those who pursue education past the primary level see their future employment as being in 'white collar' jobs, such as clerks, secretaries or teachers. Only the teachers could conceivably find work within the village but they are constrained by regulation not to teach in their home village.

A vital area of technology and innovation is that relating to the main source of income of the village - agriculture. Innovation in this sphere of activity is vital to the continued well being of the village. As we have seen, it is also the area in which innovation is, perhaps, most constrained. This is the main economic activity of most families and they are dependent on the harvests for both their food supply and the bulk of their income.

Historically, successful innovation in agriculture has not always been rewarded by an increased income. If land is rented and the value of the harvest goes up the

rent too may go up. Prior to the Revolution much of the rich land in Morelos had been seized by *haciendas*. Only lands which were too poor to be seized were left alone. Only the poverty of Ahuehuetzingo's lands prevented them being lost. In those times it was in the interest of the villagers, individually and collectively, not to be seen to be conspicuously successful farmers.

The land reform programme after the Revolution, in granting Ahuehuetzingo an *ejido*, provided one of the bases essential for the development of agriculture and the economic stability of the village - access to land for the bulk of the population. Even now, over fifty years after the land grant, with over double the 1920 population, most still have access to land. Such land may be *ejidal*, owned, rented or made available through family connections. The arable land is used primarily for food and only secondarily for generating a cash income.

All the men know the basic characteristics of the crops they plant - where they thrive, how drought affects them, and something of their nutrient requirements through the fallow practices. They also have a passing knowledge of botany through their primary education in the village school, and of fertilizers, irrigation and pesticides through the proximity of the commercial farming areas in the irrigated plain around Puente de Ixtla. They lack, however, much detailed knowledge, which would be useful to them, such as the merits of crop rotation, composting and soil conservation techniques. Within their framework of knowledge they operate

in a sophisticated and considered manner, and innovate with caution.

The major agricultural innovation which occurred after the Spanish conquest of New Spain was the introduction of draught animals. These revolutionised farming by making human labour much more effective in producing crops. At the time of the conquest, because of the large indigenous population, labour shortage was not a major obstacle to production. After the decimation of the populace by hardship and disease the introduction of draught beasts became a vital support for the colonial economic system.[1]

Until the Revolution the campesino was not really put in a position where he could exploit the potential of his land. His position in society was largely predetermined by birth, as it is still to a lesser extent, and to have a highly productive landholding was to risk having it seized. The granting of inalienable rights to land to the villages gave the promise of security and the possibility of improved living standards in the village as wealth was accumulated after the ravages of the civil war. Two important results soon followed in that a school was built and animals were raised. Señora Santos recalled that in the 1930's many children still died from disease due to malnutrition and poor medical facilities. It is now a matter of some pride that children are well fed and child mortality is much lower. The opening of the village medical centre in 1974 was looked forward to with high expectations.

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1. See Fig. 1.

Up to the end of the 1930's the animal-drawn plough and yoke had remained largely unchanged since its introduction by the Spanish. The wooden plough had a steel tip to increase its power to break through the soil and to increase its durability. In the early 1940's the market price of maíz and frijoles rose[1] and a metal mouldboard plough became available in local markets to fit to ox-drawn yokes. This plough was more effective for cultivation because of having a deeper penetration and an improved inversion of the soil.[2] This type of plough was so successful that it completely superseded the traditional plough.

It is interesting that as yet no improved yokes are marketted. These could both improve the endurance of the oxen and further increase the depth of cultivation.[3] The plough came as a simple development of the horse and tractor drawn equivalent as used in North America. Oxen had long been superseded by horses there and so there was no equivalent development in ox yokes to be transferred. Consequently the type of horn-bound yoke, first introduced by the Spanish, is still used. The one family which uses horses for cultivation has a collared yoke for the horses with a swingletree and wheeled plough, much as can be seen in horse ploughing exhibitions in Britain.

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1. See Osorio (1974) p.170.
2. The inversion is important as weed control is the main labour bottleneck in the agricultural cycle in the village and the better the inversion on ploughing the fewer the weeds which subsequently emerge.
3. See FAO (1959) pp.35-37.

The metal mouldboard plough is the most dramatic innovation in the recent history of the village. In a matter of a decade an existing technology was made completely redundant because of the proven superiority of this device. It should be noted that such innovation ties the village more firmly to the urban market as the plough can only be bought through it, and only for cash. Within the resources of the village it is impossible to fabricate such ploughs there. To talk of subsistence farming in the village context is now inaccurate as part of the product is specifically grown for market. In other words, maíz and frijoles may be the main crops but there is a planned surplus of these, and other cash crops are invariably grown.

Innovation in productive activities does occur and on a wide scale, when it can be seen that the innovation is cost effective and is reliably productive. The change from wooden to steel ploughs was also significant in that it did not involve any changes in cultivation practice. It was recognised as doing the same job better. However, the steel mouldboard plough was also able to improve the way in which weeding was carried out, as it threw the earth to one side only. If fitted with a tip which was wide and did not penetrate to a great depth, it could be used to weed very close to the row of plants, leaving only the spaces between them to be weeded by hand and the earth pushed back around the stem. This implement then is in many ways superior to its traditional counterpart and as it is very durable a single outlay lasts for many years.

This contrasts with many of the other technologies now being promoted to improve agricultural production, in particular the components of the so called 'Green Revolution'.[1] Here, ideally, the seed and the fertilizer need to be purchased annually, but without the guarantee of the third component, water, there is the possibility that the crop will be less than expected or will fail. Should it fail the same inputs will be required again the following year; a situation could arise in which two capital outlays are made with no harvest being gathered. Such a risk is unacceptable to most in the village. Even if one of the inputs, the seed, as offered by the Confederación Nacionál de Campesinos, is provided without charge the risk is still too high for most. If both seed and fertilizer were provided without charge the potential gain in a good year would be high but the risk of crop failure in a bad year would be higher than if traditional varieties of maíz had been grown. The villagers are, therefore, understandably cautious. The enterprising villager who cross bred hybrid with the traditional maíz claimed some success and certainly minimized the risk taken. Such practical experimentation is not uncommon in Mexico. Foster[2] reported a similar experiment with hybrid maíz and yet another villager who was experimenting with chicken manure for his maíz.

Santos is a good example of a poor but enterprising villager. He frequently considers new ideas and is of

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1. This has received extensive analysis. See Hart (1974) for an anotated bibliography of the Green Revolution.
2. Foster (1967) p.156.

the opinion that the villagers themselves can do much to change their own conditions. He has worked outside the village and, whilst Ayudante, visited Mexico City a number of times. His perceptual horizons extend far beyond the village lands and for him the 'image of the limited good' may have little relevance when considering ways of enhancing his income.[1] Though basically confident of his abilities and aware of the potential for change and improvement he is still fatalistic in certain respects. He lamented once that "...tengo las ideas pero no el dinero" - "I have ideas but not the money (to exploit them)". He has survived on his wit since reaching adulthood and is proud of the fact that he is his own master.

In his youth when working as a waiter he had been offered the opportunity to work in Europe as a servant but declined because he did not wish to leave his family or his novia. When eventually he returned to the village he married and has had no ambitions to leave since.

He farms mainly on his father's land and, as the elder son, is the heir apparent to the ejidal plots. When the dam provided access to irrigated land for the villagers Santos managed to rent a parcela. In the first year he planted a winter crop of maíz on the land and had hoped to grow more valuable cash crops in subsequent years but the water supply had proven inadequate and so

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1. Though the social constraints on the display of wealth which are rooted in the concept of limited wealth continue to have some impact. The constraints now may be reduced to a level of what may be considered to be in good or bad taste.

he kept the land simply to supplement his stock of food.

He realized that one of the reasons for the annual shortage of irrigation water had been the lack of control over its use and had been pressing the municipal authorities to expropriate this land and re-distribute it as ejidal land. This would bring the water under the control of the village Commisario Ejidal. This he reasoned would result both in a more equable distribution of the land and allow it to be used more profitably by the villagers.

In the meantime he, like all the others using this land, joined the annual scramble for water which resulted in its excessive use, to the detriment of the crops so inundated initially and later parched.

It perhaps appears unreasonable that an advocate of careful husbanding of the resources offered by the damming of the stream should himself be a party to their injudicious use. In the village context it is not irrational. Each individual cultivator stands alone to win the best harvest he can from his land. There is little mutual trust and so if no formal or traditional arrangements exist to regulate the division of resources each will feel, with some justification, that he must take what he considers his fair share - or perhaps even a little more! If Santos did not join the collective scramble for water his crops would fare even worse. Only by common agreement can such resources be managed. Most of the men cultivating crops on this land realize this but there exists no traditional mechanism for

ensuring fair water distribution and no one wishes to volunteer either to establish a system or to take the unenviable job of administering it. Such a task would result in inevitable arguments as to the size of the allocation and the fairness of its actual distribution.[1] So Santos, a man who believes there is a better method of distribution, sought the imposition of a solution from outside the village.

Whilst the land yields with less reliability than the rain-fed land used in the main summer season there is little prospect of profitable cash cropping. Santos' main innovation of 1974 was to use fertilizers to maintain the land in production as he could not afford to leave the land two years in fallow and pay the rent on it. He considered the winter crop valuable enough to keep the land in production albeit at extra cost.[2]

Many of the preceding examples have related to the resource investment required to introduce innovation in productive exercises. There is a notable area of possible activity, apparently open to the villagers, in which innovation does not occur. This is labour investment in productive infrastructures. This relates, in particular, to labour capital investment in improving the quality and productivity of the land.

The agricultural cycle imposes varying demands on

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1. See Chapter III section on Village Organization - on the dislike of conflict.
2. He may also have wished to have his claim 'staked' should the land be re-distributed if it were taken as ejidal land but he would not admit to this.

labour. The rainy season is almost entirely devoted to the day-to-day tasks of tending the crops. In the drier months the pace slackens. Some may find other ways of earning an income at this time. Santos had the daily income from running the water pump throughout the year. Some who are in need of cash may temporarily leave to find work. The bulk of men stay in the village and spend their time not working too strenuously and often spending many hours chatting.

Santos did most of the work on his new house during the dry months and the Ayudantia Municipal was built at this time also. This is a labour investment in essentially non-productive items; things that were desired in their own right. What is notably lacking is investment in enhancing the productivity of land. The constraint of risk minimisation does not apply as nothing is being risked; all that is lost is spare time. Nevertheless flood control schemes are not pursued, neither is terracing nor any of the other labour investments that may be seen elsewhere in the world.

Santos, who as we have seen is an intelligent and capable individual, has year after year suffered a significant loss of seedlings in one of his milpas. He saw intellectually that flood control was possible and had talked of a scheme he had heard of for controlling gulley formation. Yet at a time when he had little better use for his labour he did not attempt to reduce the severity of the damage in the following seasons by ditching or banking to divert the water away from his field.

Again the image of the 'limited good' comes to mind. Perhaps the extension of it to human health as Foster did[1] had some validity in Ahuehuetzingo even now. After a long and arduous effort through the rainy season perhaps a man needs to rest through the winter so as not to overtax his body. Certainly, labour investment in land improvement is arduous.

There are two aspects which need to be considered: not only must the price to be paid in terms of using body vitality be considered but also the extent to which the operation will be a success. Where there is no tradition of land improvement and where land has been essentially plentiful there is no knowledge of the returns that may be expected. Similarly there is scant knowledge of what techniques are available and even less of their relative attributes and merits. Even externally-promoted schemes to improve land quality rarely utilize fully the potential of village labour: the dam was built largely by machine and imported labour.

In short this is an almost untapped village potential which is unrealized by the villagers and administratively cumbersome to organize from outside the village. It does not happen much at an individual level, and collectively the blocks against action are complicated by the reluctance of the villagers to work collectively or co-operatively.

The cacahuate co-operative had given Santos his greatest outlet to speculate on possible improvements.

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1. Foster (1967) pp.129-130.

He had been among the founding members and as Ayudante had held some sway over his fellow villagers which he tried enthusiastically to recruit. He complained that in the year previous to the formation of the co-operative the coyote buying his harvest had tried to cheat him by using 'doctored' scales. It was this overriding hatred of the middlemen which was the main uniting feature of the co-operative.

After its formation the middlemen tried to tempt the members away by raising their prices and telling them that they would be robbed by the organisers. This is a common, and not altogether unjustifed, fear of villagers all over Mexico when it comes to trusting others with money. In fact some money was stolen by the accountant hired to keep the books of the co-operative. This attack, by the coyotes, on the integrity of the co-operative so upset the members that they voted to buy non-members crops at only slightly less than the members received. As the co-operative was running on cash borrowed from a bank, and not promissory notes, this seriously undermined the coyotes' hold over the cacahuate harvest. The result was that year by year membership rose.

The point should be stressed that had the co-operative been operating on promissory notes then this attack on its integrity would probably have succeeded, as cash in hand presents less risk than a promise to pay. As it was, few risks were taken in terms of their own resources by the members and less by the non-members using its facilities. In addition, no changes in cultivation practice for either group were required.

The success bred confidence, and by 1974 fertilizers to enhance yields had been purchased and improved seed was being considered. The harvest was being shelled to increase its total value and minor side enterprises were starting from this, including the manufacture and selling of confections. In this way the co-operative began to develop its own dynamic and its members frequently discussed the possibilities of the purchase of tractors and trucks, the opening of shops for the members, and even of exporting the harvest to the United States. All this was a little euphoric but at least the possibilities of the venture were being explored.

On a personal level Santos became imbued with more confidence for the future and thought that his efforts in the fields were assured a better return than he could have hoped for before the formation of the co-operative. He felt less at risk than he had previously and was, in 1974, considering selling one of his horses to finish his new house. The house had been built, bit by bit, over a number of years up to that time using only surplus funds. Now he was prepared to eat into his savings for this non-essential, but strongly desired, item. In other words he had been freed from the worst of the risk-minimising mode of action by the perceived assurance of his future income.

He was also considering extending the land under cacahuates - that is to say, reducing the area under maíz. It is a matter of time alone, if the co-operative continues to function adequately, before the yields are improved by

improved seeds, fertilizers and modified cultivation practices.

The next, and most difficult, step will be the introduction of mechanization. This will probably take the form of tractor-drawn implements as walking tractors and cultivators are not widely available in Mexico (as they are in other parts of the world, notably China and Japan). This innovation will require, inevitably, some degree of collectivisation of production which to date has not occurred in any form. Some would maintain that the venture has been little more than a credit union, operating a marketing exercise. That to a large extent is true but its significance is much deeper.

Santos, though increasingly confident about his future, is still unwilling to cease growing his staple food (maíz) and is unlikely to do so whilst there is any danger of the co-operative failing. He is still putting effort into improving his maíz yields by test-planting several different local varieties of maíz to determine experimentally the varieties most suited to the varying conditions of his widely scattered parcelas. He has no intention to start cash cropping maíz. This would require capital for hybrid seed and fertilizer and present an intolerable burden should the rains fail. He is almost certainly wise to follow his chosen course of ensuring his essential self-sufficiency by growing the bulk of his family's food requirements, and then to concentrate on building his income from the crop, cacahuates, which he has always

produced specifically for market. By this strategy he uses, to his best advantage, the facilities offered to him through the co-operative and only cautiously extends his trust to, or his dependence on, it. Conditions can change rapidly in a volatile country like Mexico. Markets collapsing, funds disappearing, laws changing, galloping inflation are all hazards, external to the village, over which he has no control. Prior to the 1910 Revolution Mexico was hailed as a haven of peace and prosperity. Santos would be foolish to think that simply because he is earning a better living this year than last that next year will even hold the same promise. It will take many such years of steady improvement for his confidence to be such that he will depend entirely on the market place for his staple food.

These recent changes have come about through the creation of a co-operative, initiated outside the village in Xoxocotla, and through the provision of funds and access to the national market. Initially this development required little more than an emotional committment on the part of the villagers. It is only now having repercussions on the cultivation practices and attitudes towards the production of food and wealth.

Not all changes need necessarily be initiated from outwith the community but obviously the 'outside' provides most of the stimuli. Most things that are new to the village have been seen elsewhere, though not all that is seen is adopted or even desired.

Sometimes basic technologies which are known and

fairly simple are not adopted. One of the clearest examples may be taken from the mountainous part of the state of Puebla.[1] Here the people are far removed from the markets and very poor. They originated from the lower, more benign lands of central Mexico and migrated to the uplands during the late colonial - early independence period. Their cultivation practices and staples, maíz and frijoles, are identical to those of their lowland compatriots.

Their housing is different; unplastered adobe will not survive the wetter summer regime and so the most common form of housing is made from pine planks cut from the forests. Here during the wet season the temperatures may fall below freezing point at night and the temperature remains low even during the day. The only form of heating is from an open fire and because of the high humidity and damp buildings the smoke hardly clears from the inside of the houses. This makes living conditions near intolerable.

With little investment, largely in the form of labour, fireplaces and chimneys could be built to render the houses much more habitable, and the fires more effective. The technology is known to them, as many brick-built houses in the villages and towns have them but there has been no such technology transfer.

It is unlikely that the people have less genetic potential than their counterparts in Morelos. They are

1. This account is based on a visit by the writer to the Rancho of Señor Lopez some 30 kilometres from Chinahuapan in August 1974.

from the same stock. Their inability to adapt and improve their condition is more likely to be due to the conservatism of their crushing poverty. They have barely enough to survive on. Their food supply towards the end of the agricultural cycle is reduced to maíz and mushrooms scavenged from the forest. For them, any change presents real dangers to their survival and the discomfort of a smoky fire is trivial compared to the real problem of ensuring survival. Their only solace lies in the consumption of their major cash crop pulque, the fermented juice of the maguey cactus. This, at least in part, insulates them from their situation though, of course, does nothing to improve their living conditions.

They could truly be described as being caught in a poverty trap which is so severe that the population pressure is denuding the forests, creating severe sheet erosion without improving the conditions. The young, when they can, leave, often for the army, as had Señor Lopez in his youth. Conditions are changing; a dirt road passable throughout the year, and traversed daily by bus, had been finished late in 1973. A school, too, is operating although reportedly neither the teacher nor the pupils attend regularly. In time, perhaps, the people will manage to improve on their standard of living or the State and Federal Governments will take a more active role in promoting their well being.

In contrast, the relatively wealthy villagers in Ahuehuetzingo have much more freedom of action. Opportunities are grasped readily when the benefits, as

assessed by the villagers, outweigh the risks. A most significant shortcoming is the lack of reliable and complete information for the individual to use to make a reasoned judgement. Frequently information comes in the form of promotion. 'Accept hybrid maíz in return for only five per cent of your yield' prompted the Confederación Nacional de Campesinós representative. For him success was in the peddling of seed - not perhaps in terms of his income (as with representatives of commercial interests), but certainly in terms of kudos in his bosses' eyes. The villagers have good reason to be suspicious of him and his kind.

This attitude also acts in reverse; villagers are notoriously suspicious of promotional schemes, especially when it requires a committment from them. The promoters react, all too often, by shrugging off villagers as fools - children. The logical, and frequent, outcome of development programmes set up in this way is a new variant on paternalism.

President Cardenas was both enlightened and sincere when he insisted that technical assistance be included as an essential part of any loan from the 'Official Banks'. This was intended as an aid to the campesino, not as a straight-jacket. As it developed, the technical assistance component became more institutionalized and paternalistic until, today, many village enterprises are effectively run by 'officials' under the implicit threat of withdrawal of funds if villagers do not comply with bank directives. This results in a marked reluctance to take up credit

opportunities, as cited in the case of the co-operative in Ahuehuetzingo and in Sinaloa[1], and an undervaluation of villagers' local knowledge and competence.

Information, particularly with respect to agricultural practices, when it comes, is often better suited to the medium-scale commercial enterprise than to the smallholding campesino. Purchased seed, chemical fertilisers and pest control agents are promoted, as is fairly large-scale mechanization. The simpler, more immediately appropriate, techniques of soil husbandry, cropping practices and even storage techniques are simply never communicated, even if known, by the extension agents operating for the many agencies which come in contact with the villagers. Thus the only sound information available to aid the campesino in determining the best course of action to take is that gained from village experience and experimentation. Santos may discover that cacahuates and maíz form a simple but effective two year rotation when he decides to plant them on 'maíz' land. With the inevitable increase on land pressure militating against the 'two year in six' typical fallow practice, improved crop nutrition may be developed using composts and manure as well as the better known, to them, bagged fertilizers.

Much the same could be said of the other areas affecting their lives such as animal husbandry, non-agricultural production, housing, medicine, and schooling.

The campesino is not resistant to any change or

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1. See Chapter IV - Desarollo Agropecuario Ejidal de Sinaloa.

innovation in which he can see the benefit and assess the risk. He will respond to improve his situation if he can receive full and unbiased information about, and be exposed to, a wider range of technologies which demand capital inputs compatible with his capacity to save or attract credit. Co-operative solutions to productive problems are possible but demand attributes which tend to be at variance with the campesino's experience of the 'modern' world.

CONCLUDING DISCUSSION

In analysing the behaviour of the villagers of Ahuehuetzingo care must be taken to understand, as far as is possible, their situation as they see it. They, as we, are conditioned and constrained by the circumstances in which they find themselves. Their rationality, of necessity, differs from that of the millionaire industrialist as it does from that of the beggar. Each has his own aspirations, ethics and resources, and, above all, experience. He will be constrained to resolve the problems encountered during the course of his life in the light of these factors.

In this study issues have been raised which extend far beyond the scope and comprehension of such a limited undertaking. Inevitably questions arise which must be answered, but the answer is continually modified in the light of continuing experience - it is an iterative process. Any definitive conclusions which may be drawn from the study are certainly bounded, if not entirely limited, by the temporal and spatial location of the observations cited.

For those interested in rural development and the wider issues of technical innovation and the transfer of technology, statements of general application are desirable. These should not be taken as being substantiated with the same rigour as those relating specifically to the observations reported in the body of this text, and would benefit from further testing or observation.

Nevertheless, this second, more tentative, group of conclusions have a potential utility which merits their inclusion.

Accordingly, this discussion of the observations and analysis will be presented in its two natural parts. The first will be concerned principally with Ahuehuetzingo, and the conclusions derived are a direct and logical consequence of the village study presented.

The second part will deal with the broader issues raised as a result of the various aspects of the analysis of the former group. It is here that the discussion moves from the analytical to the prescriptive and may illuminate issues for, or suggest action to, those interested in promoting technical, and thereby inducing social, change. These more tentative conclusions relate principally to the way in which, and under what pressures, innovations occur and point to some of the factors which impair the effectiveness of formal rural development programmes.

VILLAGE LEVEL

The villagers in Ahuehuetzingo are *mestizos* and, in an ethnic sense, not dissimilar to villagers elsewhere in central Mexico. Nevertheless much of their detailed circumstances are, of course, unique: their history and the setting of the village has shaped them into what they are. The differences in their environment has led to many subtle differences in character and attitude when compared with other villagers even close by. Xoxocotla, their closest neighbour, shows many such differences in both attitude and culture; this may, at least, in part explain why it is known as a Nahuatl village. Another nearby village which has been studied in depth also differs in many ways from Ahuehuetzingo.[1] Hence any definitive discussion of the research based on Ahuehuetzingo alone is strictly limited to this one location. It is reasonable to expect, however, that many of the observations will have wider relevance, although in this section no such linkages will be adduced.

A most significant factor in the history of the village is that it is not situated on prime agricultural land nor particularly adaptable to irrigation. The village was never incorporated into a *hacienda* though bordered by three prior to the Zapatista revolution. This must in part be attributable to the visible unproductivity of the land; it was not sufficiently valued by the *hacendados* to be worth seizing. Thus, as

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1. See Fromm (1970).

a consequence of their relative poverty the people never lost their lands, the essence of their independence. They earned and continue to earn a livelihood from their own land.

For them the Revolution brought violent disruption which reduced the population of the village, through death and migration, to less than half its 1910 level. After the conflict they obtained an ejido, and as the village had not bordered directly onto richer, irrigated, land the villagers neither expected nor received such land. For them the land grant gave an assurance of security rather than immediate access to cash-crop farming, as was the experience of villagers near lower-lying irrigated land.

For the villagers of Ahuehuetzingo the Revolution had been an unsought-for discontinuity in the life of the village. It had not been under threat of seizure and so the same passions were not aroused as had been in Emiliano Zapata's village of Anenecuilco. The villagers were the victims rather than champions of the revolution, whilst it was in progress, though afterwards they found themselves amongst its beneficiaries. For them the conflict was yet another perplexing factor outside their control.

In their dealings with outsiders the villagers are wary and, particularly when in doubt as to the rank and power of the visitor, polite and passive. When the visitor has power to wield which may be to their benefit they are positively submissive. They know from experience

that they wield little power themselves and are subject to the plans, or even whims, of those holding power outside the village. In such circumstances the villager feels that his only recourse is to take what 'crumbs' may be scattered from the table and do nothing to offend a would-be donor, whether his plans are sound or not. Rarely is any criticism of the planners and politicians voiced outside the village. Because of this phenomenon much money has been ineffectively invested in pursuit of supposed development objectives. All of the schemes undertaken by government in the village may, with hind-sight, be seen to be ill-conceived to some degree. Many of the shortcomings could have been avoided had there been any effective dialogue between the villagers and those concerned with conceiving and implementing the schemes.

The villagers' passivity to authority may be traced beyond the relative power position of villager versus government to the nature of village life. The villagers' conditions have remained relatively unchanged in many respects throughout their history, certainly prior to the Revolution, in that they were poor and dependent on agriculture without any control over the climate and its effects. They were essentially subject to the absolute authority and vagaries of nature. This led to a degree of fatality - '<u>El maíz no le da</u>', the <u>maíz</u> did not yield (well), may be said with a shrug. The villager is always subject to this uncontrollable authority. To ensure his survival he needs to have authority over that which he

feels he can command. The villagers talk of the need to dominar, dominate, the bullocks to keep them under control and to get them to work. His children and often his wife are subject to such arbitrary authority. Even the children's play educates them for acceptance of the arbitrary nature of authority. The school does little to counteract this predominant attitude.

The head of the household is almost invariably an autocrat. It is he who takes the major decisions concerning family life. Santos, who consults his wife on most things, has no reservation about making major decisions alone. All financial transactions concerning animals and harvest are made by him but his wife would not dare to make any major decision alone. He expects, as of right, to approve any decision outside the normal day-to-day running of the home.

The general submissiveness to authority breaks down when there is a direct threat to the individual or the village. The most likely threat to generate a strong response is one to the village land, which has always been central to survival. An attempt to expropriate the school parcela by a local restauranteur resulted in a singular solidarity of response to avoid its loss.

Co-operation between villagers in economically productive activities is normally limited to the family, where labour is exchanged readily when there are good familial relationships. There is no risk attached to such exchanges as the parties are tied by familial links. Outside the family there is some considerable suspicion

as to people's motives. There is always a fear that the product of the collective effort will not be equally distributed.

To trace the origins of this reluctance is difficult as it is the result of a number of interrelated factors. In communities which have in the past been relatively unchanging the total wealth of the community may be considered to be constant and by extrapolation could be considered unchangeable in the future. Thus, to work with another, who has no formal familial ties, is to risk the loss of some of the 'limited good' one already has. Further there is the necessity to trust, in part, another's capability to make the 'correct' decision. Each individual works and operates in subtly different ways and so conflicts may ensue. Conflicts are always avoided, if possible, in the village. This is partly because in a small, closed community individuals inevitably come into contact frequently, and feuds are an embarrassment to all. In addition there is a marked reluctance for individuals to assume authority or to force their opinion on their contemporaries as they too would resent such an imposition.

When extra labour is required by individuals whose families are not able to supply it then peones, day labourers, are hired. Usually, these are other villagers but there is no conflict of authority in this situation as the employer is, naturally, in a position to dictate what work is done.

Co-operative labour is carried out on village projects where no individual's resources are at risk and

no single individual stands to gain disproportionately. The Ayudantia Municipal was built in this way using municipal funds for the materials. Similarly there was considerable co-operative effort put into welcoming the State President, including a contribution from each head of household, when trying to 'seduce' him into considering the village favourably when allocating money for development projects.

The reluctance to take authority over other villagers reflects itself in the way village affairs are conducted. The Sunday village meetings are conducted with few direct arguments. Decisions emerge by common assent, rarely by vote, with difficult issues often remaining unresolved because of the failure to accommodate opposing viewpoints.

The holders of public office are elected and, as the village is poor, do not stand to gain anything financially from their periods of office. It is frequently difficult for successors to be found and re-election of an incumbent is rare. Santos, after his period of Presidency, refused re-nomination saying that 'it took up too much time and no one thanked him for trying to do a good job'. He had had to keep pushing others to make decisions and to actively promote schemes; this made him feel uncomfortable and he wished to return to the less troublesome task of working his parcelas.

The choice of technologies is limited by these constraints. Each individual is principally concerned with his own circumstances. Significant innovation has

occurred in the past—notably the adoption of technology useable on an individual basis, such as steel mould-board ploughs. Building materials, too, have changed over time with the more prestigious brick and concrete replacing adobe.

Larger-scale innovations have been introduced from outside including potable water, electricity and a small dam. These have all been welcomed by the villagers. Non-productive innovation also occurs readily such as radio, television, the consumption of soft drinks and bottled beer. These, too, are well received.

A determining factor in making choices between productive techniques is one of risk minimisation. There is an awareness of the perils of over-allocating resources into new unproven technologies or into known and proven technologies with a significant possibility of failure. Fertilizers come into this latter category as they are dependent on a number of factors to ensure their success. The villagers do not have a dependable water supply and so fertilizer application has no assurance of returning the investment in the agricultural cycle of its application. Santos only considered using them on his potentially most fertile land, fed by irrigation water from the dam, when he knew that he would either have to leave the land fallow and unproductive whilst continuing to pay rent for it or apply fertilizers. In other words his reluctance to use fertilizers is not based on a fear of the capability of the technology but

a sound consideration of the short-term risks involved in such practices. For the poor villager it is the risks in the short term which warrant most urgent consideration, as his reserves are strictly limited. It is only the wealthier villagers who can afford to look beyond such limited horizons and trade off short-term risk against long-term benefit.

Other cases may be cited in which the consideration of what course of action should be taken was based on a rational consideration of the relative merits of the alternatives. In some instances choice was based on the results of experimentation. For example, Santos made use of sample plantings to determine the best local maíz variety in each of his parcelas.

Frequently traditional practices are followed which may be in some ways inferior to the possible alternatives. One important factor which characterises a traditional practice is that it exists because of its proven ability to perform the operation required. Whilst it is still perceived by the villagers to be performing adequately it will not be supplanted. Often the retention of a practice is not a conscious decision. Bullocks are trained by a technique of domination simply because it has always been done that way and also because it is a rapid training process and works. Alternative training methods are not considered seriously. Where traditional practices are replaced there must be a strong impetus and at least one alternative course of action with a proven capability to out-perform the traditional practice.

A factor limiting the choice of technologies and in making sound decisions is lack of information. The range of technical options is strictly limited both in the devices available, and potentially available, and the techniques which could be used to improve yields or increase economic returns. The technique of crop rotation is not known to the villagers, composting and manuring is not practised to any extent and information on commercial farming techniques is limited largely to manufacturers' information. The limited access to capital in the form of agricultural credit, though a constraint, is by no means the sole or dominant constraint to innovation.

An apparently illogical failure to innovate is to be seen in the area of labour investment in improving land productivity. No slack season work is done in clearing stones from the land or implementing flood-control schemes on even a modest scale. No clear reason can be given for this, though certain hypotheses may be put forward any, or all, of which might apply. The arduous nature of labour investment may be a disincentive, especially if the image of the 'limited good' is extended to health.[1]

In a community such as Ahuehuetzingo, where hired labour is used to perform tasks within the normal agricultural cycle, some of the significance of the economic relationship between labour and production is understood. Whether the conceptual jump is made by the

1. See, for example, Foster (1967) pp.129-130.

villagers to the use of labour as an economic investment in its own right is unclear. Perhaps there is no realization of the potential gains to be made, as there is no tradition of investment in such technologies. This is likely to be a relevant factor, as there has been investment by individuals in irrigation works. These, for a village close to large irrigated areas, have a known potential. Certainly the normal constraints of risk minimisation do not apply, as no capital investment would be involved with most land improvement activities. There is little indication at present that the potential of this area of activity will be realized.

The villagers do benefit from the good road connections which give ready access to markets to those able to gain access to a means of transport. They are also able to see the farming techniques used in the richer lands in the area around Puente de Ixtla. However, much of what they see is applicable to conditions very different from the village context. This is particularly noticeable in the land below the dam, which is irrigated excessively when water is available, following the techniques used in the area for rice production, not a syphon tube one, more suitable for <u>maíz</u>. No training had been given after the dam was built and the villagers have only their knowledge of the predominantly sugar-cane-growing irrigated lands to guide them. The result is a sub-optimal use of the limited potential offered by the dam.

A most encouraging sign for the future of the

village is the development of the cacahuate co-operative. This was formed, unprompted by outside agencies, between five villages and was even subject to some 'official' criticism because it transcended village boundaries. It shunned the use of finance from the 'official' banks, in part because of the fact that the credit is tied to a system of technical advice and marketing control which is frequently paternalistic and effectively takes control from the co-operative members. After some teething troubles in the first few years the venture appears to be thriving.

A notable feature of its formation and development is that it avoided many of the potential internal conflicts which arise from co-operatives which are not spontaneously formed from within the group. Its initial form was little more than a credit union, marketing collectively. There was no change in cultivation or harvesting practice and the crop was purchased from each member using the borrowed capital. In other words there was no individual risk; the organization used risk capital from a private bank. The increased returns resulted from the by-passing of the despised middlemen, and direct selling in the Mexico City market. From season to season confidence has grown and, by 1974, the co-operative had started to purchase fertilizers, to commence the processing of the harvest and to consider further departures. All this was activily developed without any governmental or 'official' approval or intervention.

The success of the venture has resulted in growing numbers of villagers joining in-prompted, no doubt, by

the purchase of some non-members' harvests and an increasing confidence on the part of the villagers in their capability in directing the co-operative, and so in having some control of their future.

The villagers are as variable in personality and capabilities as any other cross-section of humanity. They are well aware, and demonstrably capable of making rational appraisals, of their situation. Viewed from outside the village setting some of the bases of the appraisal might seem over cautious but one must remember that such caution has in the past ensured the survival of such communities for millenia. If development policies are to help villagers to progress and improve their standard of living then the villagers must be treated with respect. The way they see their future is inevitably different from any external observers' view and, if they are to contribute to the general prosperity of Mexico, they must be entrusted with the responsibility of making their own decisions and so develop their own skills. If this is not done any self-sustaining rural development programme is impossible without dismantling the village, as it has been described here, and incorporating the villagers into some other organisation with a dynamism based on other, perhaps less human, economic objectives.

SOME WIDER ISSUES

Some of the wider issues raised above must now be discussed to draw out points which may have possible relevance in villages in Mexico and elsewhere. Some of the specific observations of Ahuehuetzingo are obviously of a more general relevance and within the literature on other rural communities many similarities are to be seen.

Perhaps the point touched upon in the final paragraph of the previous section is a suitable point of departure as it is here that the possibilities for the future development of such villages lies. For any development programme to survive and progress, past the initial impetus, it is essential that the participants themselves assume the initiative. For this to happen there must be mutual trust between those who are given a responsibility to promote change and those who are to be the beneficiaries, or victims, of the exercises.

Many instances may be cited, in Ahuehuetzingo and elsewhere, where such trust has not been present. The villagers certainly have no particular cause to trust the outsiders whose commitment to the village is minimal, who show little understanding of the situation, and whose interventions rarely show any continuity.

Mexico's six-year Presidential cycle does little to ameliorate this, as each incumbent feels bound to sweep away the old policies, and principal officials associated with them, and to introduce fresh ones. Long-term schemes rarely operate at the village level. These are associated more with the major, publicly visible,

programmes on which the long-term credibility of the Partido Revolucionario Institutional depends - the big dams and the sugar industry are examples.

The 'official' banks which are removed, in part, from this sexennial cycle can provide some continuity for small-scale enterprises over a longer time scale, but they are unable to gain the trust of villagers because of their failure to show trust in villagers. To ensure that a reasonable return on their investment is achieved they over-manage many of the enterprises in which they are involved. Wages are paid to villagers to cover the pre-harvest labour input, crops are bought and sold by the banks and the entire agricultural cycle regulated by the banks' agronomists. Villagers are frequently little more than employees of a remotely-controlled city business.

The failure of the banks to stimulate genuine self-sustained development is seen in the continuing out-performance of the ejidal sector by the private. The attempt to optimise the economic return on investment by strict managerial controls is self defeating in that the effort is too dispersed and the system unresponsive to local conditions. The villagers themselves become frustrated by their lack of power to control their own activities and, inevitably, fail to develop the decision-making skills and technical expertise necessary to further their own progress.

The most notable successes in small scale agriculture in both China and Japan[1] have depended upon the cultivators

1. See Hayami (1975)

themselves and their concentration on developing their skills and emphasising their need for self reliance. This is in sharp contrast to the tendency towards paternalism prevalent in Mexico, which has been further compounded by the failure of the education system to communicate much-needed information on agricultural practices and other skills relevant to rural life.

Innovation is dependent on the knowledge or belief of the existence or possible existence of alternative technologies. Information on techniques and simple tools may be communicated in many ways, both verbal and printed. Schooling is only one of many possible avenues. What cannot be carried out at a village level is that which requires complex hardware to be produced. This presents a virtually insoluble problem even to the most innovative villager. Mexico, at the village level, is sadly lacking in information on technologies, and suffers from a complete absence of many of the types of machinery and hand tools readily available to the small-scale agriculturalist in many parts of the world. This lack cannot be remedied at a village level and little is being done at the 'official' or governmental level.

Co-operation is an obvious way in which a greater number of technological options may be made available. Both resources and skills, though not necessarily both, may be pooled. In Ahuehuetzingo the cacahuate co-operative was a pointer to what could be achieved by the villagers themselves. It was also a guide to the difference between a self-directed approach and that of

an externally-promoted development. This venture avoided, initially, any changes in the agricultural practices either through collective effort, such as co-operative labour for harvesting, or through changes in cultivation techniques, such as fertilizer application. Attention was paid first to the clearest common issue amongst the members - the margin taken by middlemen in handling their harvest. This in itself was a unique unifying factor and also increased the return on the harvest by a 'quantum jump'. No risks were taken by individuals and, importantly, individual responsibility was maintained over the production of the crop. Only the subsequent building on success, and enhanced confidence, led to changes of cultivation practice being considered seriously and undertaken. As the members' confidence in the organization grows so does the possibility that the traditional reluctance to join in co-operative labour activities may subside and the full potential of the co-operative be realized.

The final objectives of the enterprise remain undefined though each member has his own ideas. The future possibilities are innumerable and there is the possibility that all, or none, of them will be taken up. The organization originated with the members and responded to their needs. There was not the urgency so apparent in many sponsored exercises, such as the DAES collectives in Sinaloa, which had to show substantial results within a Presidential cycle, possibly to be neglected thereafter. In Ahuehuetzingo the objectives were in many ways

different. The villagers wanted essentially to achieve a better return for their labour. They did not want an instant jump to optimal crop yields marketed at a maximum price. That would have presented too many unknowns to be considered safe. Much better an accelerated evolution controlled by themselves.

Co-operatives, in many varied forms, have been generally recognised as a key to rural development in many parts of the world including Mexico. They certainly have the potential to utilize the skills and labour of rural communities in a much more productive way than the customary forms of village organization. They are, however, an innovation which is always constrained by customary logic being applied to any technological innovation and, in the long run, depend entirely on the sustained enthusiasm of the members. It is vital, therefore, that they fit the needs of the members and have a form sufficiently flexible to evolve in line with changing needs. They clearly must and will change over time.

Had this study been undertaken in the mountains of Puebla then the writer might not have been able to report on the capabilities of the villagers with such confidence. There is a level of poverty below which day-to-day survival dominates the situation, and innovation by those with family responsibilities is of necessity slow and cautious. Risk-minimisation may then be vital to the survival of the family. Only the young can escape before they acquire crushingly conservative responsibilities. Their loss compounds the problems for those remaining,

as the enterprising and the strong are the ones who leave. In such circumstances direct intervention appears vital to raise the living standards beyond subsistence level and allow individuals to plan even the most hesitating step into the future. Such poverty has led to over-exploitation of the resources of the area with the result that they are being irretrievably lost. The denudation of forests has led to sheet erosion on a large scale, which reduces the forest land to bare rock, rather than to open it to agricultural production.

Infrastructure such as roads, schools, and medical services are essential in much of Puebla, as they are to any village pursuing economic development. Further, capital to implement re-afforestation, soil conservation and technical advice to reveal the possibilities of changed agricultural and silvicultural practices are vitally needed here. In Ahuehuetzingo such inputs are not so urgent as the villagers have been able to make much progress through their own efforts though they still lack much information.

The Mexican government has an, as yet, unrealized role to play in the transfer of essential information. At present little reaches the village about cultivation techniques and practises and results of objective assessments of seeds and fertilizer are not provided. Even the provision of weather forecasts could ease both the dilemma of the cultivator when making his choice of cropping pattern, and deciding when to fertilize. Similarly market forecasts would assist harvesting

decisions. To a limited extent the prices obtained for staples and certain cash crops have been stabilised by Government action but there is a large spectrum of commodities not yet covered. The villagers have some access to the necessary media, radio, television, papers and extension personnel; only the vision and organization are lacking. The villagers in Ahuehuetzingo have chosen innovatory courses of action, and are well capable of innovation without direct outside intervention, whenever knowledge of alternatives is available and their merits warrant change.

It is evident that, once above the subsistence threshold, villagers are capable of taking a much more active part in developing Mexican agriculture and improving rural prosperity, but this is only likely to occur if they are allowed and encouraged to assume greater responsibility for planning and administering the process. Development for them is not reaching a goal set and controlled externally; it is something which is within them which relates to their aims and aspirations. They will only pursue development policies with vigour when these coincide with their own needs and desires. To achieve this practically they must, to a greater or lesser extent, be enabled to control their own destiny. They can and do exhibit the necessary dynamic traits but these invariably remain dormant until their vision is matched to their capabilities as they see them. To the external observer they appear excessively conservative or even apathetic; a more informed view recognises the proven survival potential of such conservatism and the latent potential for change which it conceals.

SUMMARY CONCLUSIONS

Though a study such as this does not lend itself readily to concise conclusions it is useful to draw out those which have made themselves apparent in this analysis.

1. The villagers are remarkably rational in their choice of technologies, especially those relating to food production or other economically productive activities.

2. The bases of this rationality are coloured by the confines of each villager's world and will not necessarily be obvious to an outside observer. Many factors impinge on the decision-maker's assessment of the options of which he is aware, including the risk he incurs in pursuing each, its potential return and the prestige it involves.

3. Tradition is not pursued uncritically. In productive activities experiments may be done on a piecemeal basis and traditions may become supplanted by new techniques where these prove to be consistently better than the traditional ones. These may in their turn become 'new' traditions. The following of evolving traditional practices has been the basis of survival for millennia, even though they are sub-optimal at <u>any</u> particular time in terms of their productive capacity, as they are based on past successes. If they cease to function effectively they will be replaced by alternatives, when these are time proven. Villagers are rightly cautious about the abandonment of their traditions as, in so doing, they may be limiting their capacity to survive.

4. For innovation in a productive activity to occur

spontaneously it must be seen, by the potential innovator, not only to offer a benefit over existing practices but also to present a risk not significantly greater than that associated with existing practices. In general, the poorer the individual villager the more reluctant he is to innovate and the more dominating are the short-term risks he faces. Choices between alternative techniques are made on the basis of what is known of their characteristics rather than on 'novelty' or other external factors. A new technology may look, or be, impressive but will not be considered for adoption until the villager believes he has the knowledge sufficient to enable him to make a sensible choice.

5. Villagers are resistant to outsiders actively 'selling' ideas. They are justifiably suspicious of the motives of the promoters and their knowledge of the villagers' situation. Though they rarely make any comment to these outsiders to this effect they normally take what they can without making any commitment to the 'scheme' being promoted. The course of action they take is, in the event, little affected by the advice of such promoters.

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APPENDIX A

THE PLAN DE AYALA

Liberating Plan of the sons of the State of Morelos, affiliated with the Insurgent Army which defends the fulfilment of the Plan of San Luis, with the reforms which it has believed proper to add in benefit of the Mexican Fatherland.

We who undersign, constituted in a revolutionary junta to sustain and carry out the promises which the revolution of 20 November 1910, just past, made to the country, declare solemnly before the face of the civilized world which judges us and before the nation to which we belong and which we call (*sic, llamamos,* misprint for *amamos,* love), propositions which we have formulated to end the tyranny which oppresses us and redeem the fatherland from the dictatorships which are imposed on us, which (propositions) are determined in the following plan:

1. Taking into consideration that the Mexican people led by Don Francisco I. Madero went to shed their blood to reconquer liberties and recover their rights which had been trampled on, and not for a man to take possession of power, violating the sacred principles which he took on oath to defend underthe slogan 'Effective Suffrage and No Reelection', outraging thus the faith, the cause, the justice, and the liberties of the people: taking into consideration that that man to whom we refer is Don Francisco I. Madero, the same who initiated the above-cited revolution, who imposed his will and influence as a governing norm on the Provisional Government of the ex-President of the Republic Attorney Francisco L. de Barra (sic), causing with this deed repeated sheddings of blood and multiplicate misfortunes for the fatherland in a manner deceitful and ridiculous, having no intentions other than satisfying his personal ambitions, his boundless instincts

as a tyrant, and his profound disrespect for the fulfilment of the pre-existing laws emanating from the immortal code of '57, written with the revolutionary blood of Ayutla;

Taking into account that the so-called Chief of the Liberating Revolution of Mexico, Don Francisco I. Madero, through lack of integrity and the highest weakness, did not carry to a happy end the revolution which gloriously he initiated with the help of God and the people, since he left standing most of the governing powers and corrupted elements of oppression of the dictatorial government of Porfirio Diaz which are not nor can in any way be the representation of National Sovereignty, and which, for being most bitter adversaries of ours and of the principles which even now we defend, are provoking the discomfort of the country and opening new wounds in the bosom of the fatherland, to give it its own blood to drink; taking also into account that the aforementioned Sr Francisco I. Madero, present President of the Republic, tries to avoid the fulfilment of the promises which he made to the Nation in the Plan of San Luis Potosi, being (*sic, siendo,* misprint for *cinendo,* restricting) the above-cited promises to the agreements of Ciudad Juarez, by means of false promises and numerous intrigues against the Nation nullifying, pursuing, jailing, or killing revolutionary elements who helped him to occupy the high post of President of the Republic.

Taking into consideration that the so-often-repeated Francisco I. Madero has tried with the brute force of bayonets to shut up and to drown in blood the pueblos who ask, solicit, or demand from him the fulfilment of the promises of the revolution, called them bandits and rebels, condemning them to a war of extermination without conceding or granting a single one of the guarantees which reason justice, and the law prescribe; taking equally into consideration that the President

of the Republic Francisco I. Madero has made of Effective Suffrage a bloody trick on the people, already against the will of the same people imposing Attorney Jose M. Pino Suarez in the Vice-Presidency of the Republic, or (imposing as) Governors of the States (men) designated by him, like the so-called General Ambriosio Figueroa, scourge and tyrant of the people of Morelos, or entering into scandalous cooperation with the cientifico party, feudal landlords, and oppressive bosses, enemies of the revolution proclaimed by him, so as to forge newchains and follow the pattern of a new dictatorship more shameful amd more terrible than than of Porfirio Diaz, for it has been clear and patent that he has outraged the sovereignty of the States, trampling on the laws without any respect for lives or interests, as has happened in the State of Morelos, and others, leading them to the most horrendous anarchy which contemporary history registers.

For these considerations we declare the aforementioned Francisco I. Madero inept at realizing the promises of the revolution of which he was the author, because he has betrayed the principles with which he tricked the will of the people and was able to get into power: incapable of governing, because he has no respect for the law and justice of the pueblos, and a traitor to the fatherland, because he is humiliating in blood and fire Mexicans who want liberties, so as to please the cientif-icos, landlords, and bosses who enslave us, and from today on we begin to continue the revolution begun by him, until we achieve the overthrow of the dictatorial powers which exist.

2. Recognition is withdrawn from Sr Francisco I. Madero as Chief of the Revolution and as President of the Republic, for the reasons which before were expressed, it being attempted to overthrow this official.

3. Recognized as Chief of the Liberating Revolution is the illustri-ous General Pascual Orozco, the second of the Leader Don Francisco I. Madero, and in case he does not accept this delicate post, recognition as Chief of the Revolution will go the General Don Emiliano Zapata.

4. The Revolutionary Junta of the State of Morelos manifests to the Nation under formal oath: that it makes its own the plan of San Luis Potosi, with the additions which are expressed below in benefit of the oppressed pueblos, and it will make itself the defender of the principles it defends until victory or death.

5. The Revolutionary Junta of the State of Morelos will admit no transactions or compromises until it achieves the overthrow of the dictatorial elements of Porfirio Diaz and Francisco I. Madero, for the nation is tired of false men and traitors who make promises like liberators and who on arriving in power forget them and constitute themselves as tyrants.

6. As an additional part of the plan we invoke, we give notice: that (regarding) the fields, timber, and water which landlords, cientificos, or bosses have usurped, the pueblos or citizens who have the titles corresponding to those properties will immediately enter into possession of that real estate of which they have been despoiled by the bad faith of our oppressors, maintaining at any cost with arms in hand the mentioned possession; and the usurpers who consider themselves with a right to them (those properties) will deduce it before the special tribunals which will be established on the triumph of the revolution.

7. In virtue of the fact that the immense majority of Mexican pueblos and citizens are owners of no more than the land they walk on, suffering the horrors of poverty without being able to improve their social condition in any way or to dedicate themselves to Industry or Agriculture, because lands, timber, and water are monopolized in a few hands, for this cause there will be expropriated the third part of those monopolies from the powerful proprietors of them, with prior

indemnization, in order that the pueblos and citizens of Mexico may obtain ejidos, colonies, and foundations for pueblos, or fields for sowing or labouring, and the Mexicans' lack of prosperity and well-being may improve in all and for all.

8. (Regarding) The landlords, cientificos, or bosses who oppose the present plan directly or indirectly, their goods will be nationalized and the two third parts which (otherwise would) belong to them will go for indemnizations of war, pensions for widows and orphans of the victims who succumb in the struggle for the present plan.

9. In order to execute the procedures regarding the properties aforementioned, the laws of disamortization and nationalization will be applied as they fit, for serving us as norm and example can be those laws put in force by the immortal Juarez on ecclesiastical properties which punished the despots and conservatives who in every time have tried to impose on us the ignominious yoke of oppression and backwardness.

10. The insurgent military chiefs of the Republic who rose up with arms in hand at the voice of Don Francisco I. Madero to defend the plan of San Luis Potosi, and who oppose with armed force the present plan, will be judged traitors to the cause which they defended and to the fatherland, since at present many of them, to humour the tyrants for a fistful of coins, or for bribes or connivance, are shedding the blood of their brothers who claim the fulfilment of the promises which Don Francisco I. Madero made to the nation.

11. The expenses of war will be taken in conformity with Article 11 of the Plan of San Luis Potosi, and all procedures employed in the revolution we undertake will be in conformity with the same instructions which the said plan determines.

12. Once triumphant the revolution which we carry into the path of reality, a Junta of the principal revolutionary chiefs from the different States will name or designate an interim President of the Republic, who will convoke elections for the organization of the federal powers.

13. The principal revolutionary chiefs of each State will designate in Junta the Governor of the State to which they belong, and this appointed official will convoke elections for the due organization of the public powers, the object being to avoid compulsory appointments which work the misfortune of the pueblos, like the so-well-known appointment of Ambrosio Figueroa in the State of Morelos and others who drive us to the precipice of bloody conflicts, sustained by the caprice of the dictator Madero and the circle of cientificos and landlords who have influenced him.

14. If President Madero and other dictatorial elements of the present and former regime want to avoid the immense misfortunes which afflict the fatherland, and (if they) possess true sentiments of love for it, let them make immediate renunciation of the posts they occupy and with that they will with something staunch the grave wounds which they have opened in the bosom of the fatherland, since, if they do not do so, on their heads will fall the blood and the anathema of our brothers.

15. Mexicans: consider that the cunning and bad faith of one man is shedding blood in a scandalous manner, because he is incapable of governing; consider that his system of government is choking the fatherland and trampling with the brute force of bayonets on our institutions; and thus, as we raised up our weapons to elevate him to

power, we again raise them up against him for defaulting on his promises to the Mexican people and for having betrayed the revolution initiated by him, we are not personalists, we are partisans of principles and not of men!

Mexican People, support this plan with arms in hand and you will make the prosperity and well-being of the fatherland.

Ayala, 25 November 1911 Liberty, Justice, and Law

Signed, General in Chief Emiliano Zapata; Generals Eufemio Zapata, Francisco Mendoza, Jesus Morales, Jesus Navarro, Otilio E. Montano, Jose Trinidad Ruiz, Proculo Capistran; Colonels Felipe Vaquero, Cesareo Burgos, Quintin Gonzalez, Pedro Salazar, Simon Rojas, Emigdio Marmolejo, Jose Campos, Pioquinto Galis, Felipe Tijera, Rafael Sanchez, Jose Perez, Santiago Aguilar, Margarito Martinez, Feliciano Dominguez, Manual Vergara, Cruz Salazar, Lauro Sanchez, Amador Salazar, Lorenzo Vazquez, Catarino Perdomo, Jesus Sanchez, Domingo Romero, Zacarias Torres, Bonifacio Garcia, Daniel Andrade, Ponciano Dominguez, Jesus Capistran; Captains Daniel Mantilla, Jose M. Carrillo, Francisco Alarcon, Severiano Gutierrez; and more signatures follow. (This) is a true copy taken from the original. Camp in the Mountains of Peubla, 11 December 1911. Signed General in Chief Emiliano Zapata.

ARTICLE 27 OF THE MEXICAN CONSTITUTION OF 1917 [1]

Art. 27. The ownership of lands and waters comprised within the limits of the national territory is vested originally in the Nation, which has had, and has, the right to transmit title thereof to private persons, thereby constituting private property.

Private property shall not be *expropriated* except for reasons of public utility and *by means of* indemnification.

The Nation shall have at all times the right to impose on private property such limitations as the public interest may demand as well as the right to regulate the development of natural resources, which are susceptible of appropriation, in order to conserve them and equitably to distribute the public wealth. For this purpose necessary measures shall be taken to divide large landed estates; to develop small landed holdings; to establish new centers of rural population with such lands and waters as may be indispensable to them; to encourage agriculture and to prevent the destruction of natural resources, and to protect property from damage detrimental to society. Settlements, hamlets situated on private property and communes which lack lands or water or do not possess them in sufficient quantities for their needs shall have the right to be provided with them from the adjoining properties, always having due regard for small landed holdings. Wherefore, all grants of lands made up to the present time under the decree of January 6, 1915, are confirmed. Private property acquired for the said purposes shall be considered as taken for public utility.

In the Nation is vested direct ownership of all minerals or substances which in veins, layers, masses, or beds constitute deposits whose nature is different from the components of the land, such as minerals from which metals and metaloids used for industrial purposes are extracted; beds of precious stones, rock salt and salt lakes formed directly by marine waters, products derived from the decomposition of rocks, when their exploitation requires underground work; phosphates which may be used for fertilizers; solid mineral fuels; petroleum and all hydro-carbons—solid, liquid or gaseous.

[1] *The Annals* of the American Academy of Political and Social Science, May, 1917, pp. 15-25.

In the Nation is likewise vested the ownership of the waters of territorial seas to the extent and in the terms fixed by the law of nations; those of lakes and inlets of bays; those of interior lakes of natural formation which are directly connected with flowing waters; those of principal rivers or tributaries from the points at which there is a permanent current of water in their beds to their mouths, whether they flow to the sea or cross two or more States; those of intermittent streams which traverse two or more States in their main body; the waters of rivers, streams, or ravines, when they bound the national territory or that of the States; waters extracted from mines; and the beds and banks of the lakes and streams hereinbefore mentioned, to the extent fixed by law. Any other stream of water not comprised within the foregoing enumeration shall be considered as an integral part of the private property through which it flows; but the development of the waters when they pass from one landed property to another shall be considered of public utility and shall be subject to the provisions prescribed by the States.

In the cases to which the two foregoing paragraphs refer, the ownership of the Nation is inalienable and may not be lost by prescription; concessions shall be granted by the Federal Government to private parties or civil or commercial corporations organized under the laws of Mexico, only on condition that said resources be regularly developed, and on the further condition that the legal provisions be observed.

Legal capacity to acquire ownership of lands and waters of the nation shall be governed by the following provisions:

I. Only Mexicans by birth or naturalization and Mexican companies have the right to acquire ownership in lands, waters and their appurtenances, or to obtain concessions to develop mines, waters or mineral fuels in the Republic of Mexico. The Nation may grant the same right to foreigners, provided they agree before the Department of Foreign Affairs to be considered Mexicans in respect to such property, and accordingly not to invoke the protection of their Governments in respect to the same, under penalty, in case of breach, of forfeiture to the Nation of property so acquired. Within a zone of 100 kilometers

from the frontiers, and of 50 kilometers from the sea coast, no foreigner shall under any conditions acquire direct ownership of lands and waters.

II. The religious institutions known as churches, irrespective of creed, shall in no case have legal capacity to acquire, hold or administer real property or loans made on such real property; all such real property or loans as may be at present held by the said religious institutions, either on their own behalf or through third parties, shall vest in the Nation, and any one shall have the right to denounce property so held. Presumptive proof shall be sufficient to declare the denunciation well-founded. Places of public worship are the property of the Nation, as represented by the Federal Government, which shall determine which of them may continue to be devoted to their present purposes. Episcopal residences, rectories, seminaries, orphan asylums or collegiate establishment of religious institutions, convents or any other buildings built or designed for the administration, propaganda, or teaching of the tenets of any religious creed shall forthwith vest, as of full right, directly in the Nation, to be used exclusively for the public services of the Federation or of the States, within their respective jurisdictions. All places of public worship which shall later be erected shall be the property of the Nation.

III. Public and private charitable institutions for the sick and needy, for scientific research, or for the diffusion of knowledge, mutual aid societies or organizations formed for any other lawful purpose shall in no case acquire, hold or administer loans made on real property, unless the mortgage terms do not exceed ten years. In no case shall institutions of this character be under the patronage, direction, administration, charge or supervision of religious corporations or institutions, nor of ministers of any religious creed or of their dependents, even though either the former or the latter shall not be in active service.

IV. Commercial stock companies shall not require, hold, or administer rural properties. Companies of this nature which may be organized to develop any manufacturing, mining, petroleum or other industry, excepting only agricultural industries, may acquire, hold or administer lands only in an area absolutely necessary for their establishments or adequate to serve the purposes indicated, which

the Executive of the Union or of the respective State in each case shall determine.

V. Banks duly organized under the laws governing institutions of credit may make mortgage loans on rural and urban property in accordance with the provisions of the said laws, but they may not own nor administer more real property than that absolutely necessary for their direct purposes; and they may furthermore hold temporarily for the brief term fixed by law such real property as may be judicially adjudicated to them in execution proceedings.

VI. Properties held in common by co-owners, hamlets situated on private property, pueblos, tribal congregations and other settlements which, as a matter of fact or law, conserve their communal character, shall have legal capacity to enjoy in common the waters, woods and lands belonging to them, or which may have been or shall be restored to them according to the law of January 6, 1915, until such time as the manner of making the division of the lands shall be determined by law.

VII. Excepting the corporations to which Clauses III, IV, V and VI hereof refer, no other civil corporation may hold or administer on its own behalf real estate or mortgage loans derived therefrom, with the single exception of buildings designed directly and immediately for the purposes of the institution. The States, the Federal District and the Territories, as well as the municipalities throughout the Republic, shall enjoy full legal capacity to acquire and hold all real estate necessary for public services.

The Federal and State laws shall determine within their respective jurisdictions those cases in which the occupation of private property shall be considered of public utility; and in accordance with the said laws the administrative authorities shall make the corresponding declaration. The amount fixed as compensation for the expropriated property shall be based on the sum at which the said property shall be valued for fiscal purposes in the catastral or revenue offices, whether this value be that manifested by the owner or merely impliedly accepted by reason of the payment of his taxes on such a basis, to which there shall be added ten per cent. The increased value which the property in question may have acquired through improvements made subsequent to the date of the fixing of the fiscal value shall be the only matter subject to expert opinion and to judicial deter-

mination. The same procedure shall be observed in respect to objects whose value is not recorded in the revenue offices.

All proceedings, findings, decisions and all operations of demarcation, concession, composition, judgment, compromise, alienation, or auction which may have deprived properties held in common by co-owners, hamlets situated on private property, settlements, congregations, tribes and other settlement organizations still existing since the law of June 25, 1856, of the whole or a part of their lands, woods and waters, are declared null and void; all findings, resolutions and operations which may subsequently take place and produce the same effects shall likewise be null and void. Consequently all lands, forests and waters of which the above-mentioned settlements may have been deprived shall be restored to them according to the decree of January 6, 1915, which shall remain in force as a constitutional law. In case the adjudication of lands, by way of restitution, be not legal in the terms of the said decree, which adjudication has been requested by any of the above entities, those lands shall nevertheless be given to them by way of grant, and they shall in no event fail to receive such as they may need. Only such lands, title to which may have been acquired in the divisions made by virtue of the said law of June 25, 1856, or such as may be held in undisputed ownership for more than ten years are excepted from the provision of nullity, provided their area does not exceed fifty hectares. Any excess over this area shall be returned to the commune and the owner shall be indemnified. All laws of restitution enacted by virtue of this provision shall be immediately carried into effect by the administrative authorities. Only members of the commune shall have the right to the lands destined to be divided, and the rights to these lands shall be inalienable so long as they remain undivided; the same provision shall govern the right of ownership after the division has been made. The exercise of the rights pertaining to the Nation by virtue of this article shall follow judicial process; but as a part of this process and by order of the proper tribunals, which order shall be issued within the maximum period of one month, the administrative authorities

shall proceed without delay to the occupation, administration, auction, or sale of the lands and waters in question, together with all their appurtenances, and in no case may the acts of the said authorities be set aside until final sentence is handed down.

During the next constitutional term, the Congress and the State Legislatures shall enact laws, within their respective jurisdictions, for the purpose of carrying out the division of large landed estates, subject to the following conditions:

(a) In each State and Territory there shall be fixed the maximum area of land which any one individual or legally organized corporation may own.

(b) The excess of the area thus fixed shall be subdivided by the owner within the period set by the laws of the respective locality; and these subdivisions shall be offered for sale on such conditions as the respective governments shall approve, in accordance with the said laws.

(c) If the owner shall refuse to make the subdivision, this shall be carried out by the local government, by means of expropriation proceedings.

(d) The value of the subdivisions shall be paid in annual amounts sufficient to amortize the principal and interest within a period of not less than twenty years, during which the person acquiring them may not alienate them. The rate of interest shall not exceed five per cent per annum.

(e) The owner shall be bound to receive bonds of a special issue to guarantee the payment of the property expropriated. With this end in view, the Congress shall issue a law authorizing the States to issue bonds to meet their agrarian obligations.

(f) The local laws shall govern the extent of the family patrimony, and determine what property shall constitute the same on the basis of its inalienability; it shall not be subject to attachment nor to any charge whatever.

All contracts and concessions made by former governments from and after the year 1876 which shall have resulted in the monopoly of lands, waters and natural resources of the Nation by a single individual or corporation, are declared subject to revision, and the Executive is authorized to declare those null and void which seriously prejudice the public interest.